

# THE COMMERCIAL CAR JOURNAL

Entered as second-class matter at the Post Office at Philadelphia, Pa.,  
under the act of March 3, 1879

Vol. XX PHILADELPHIA, SEPT. 15, 1920 No. 1

Published the 15th of each month by the

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Philadelphia, U.S.A.

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United States and Possessions	\$2.00
Canada	3.00
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Single Copies	40c

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the old as well as the new

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# WYMAN- GORDON

## Guaranteed Forgings

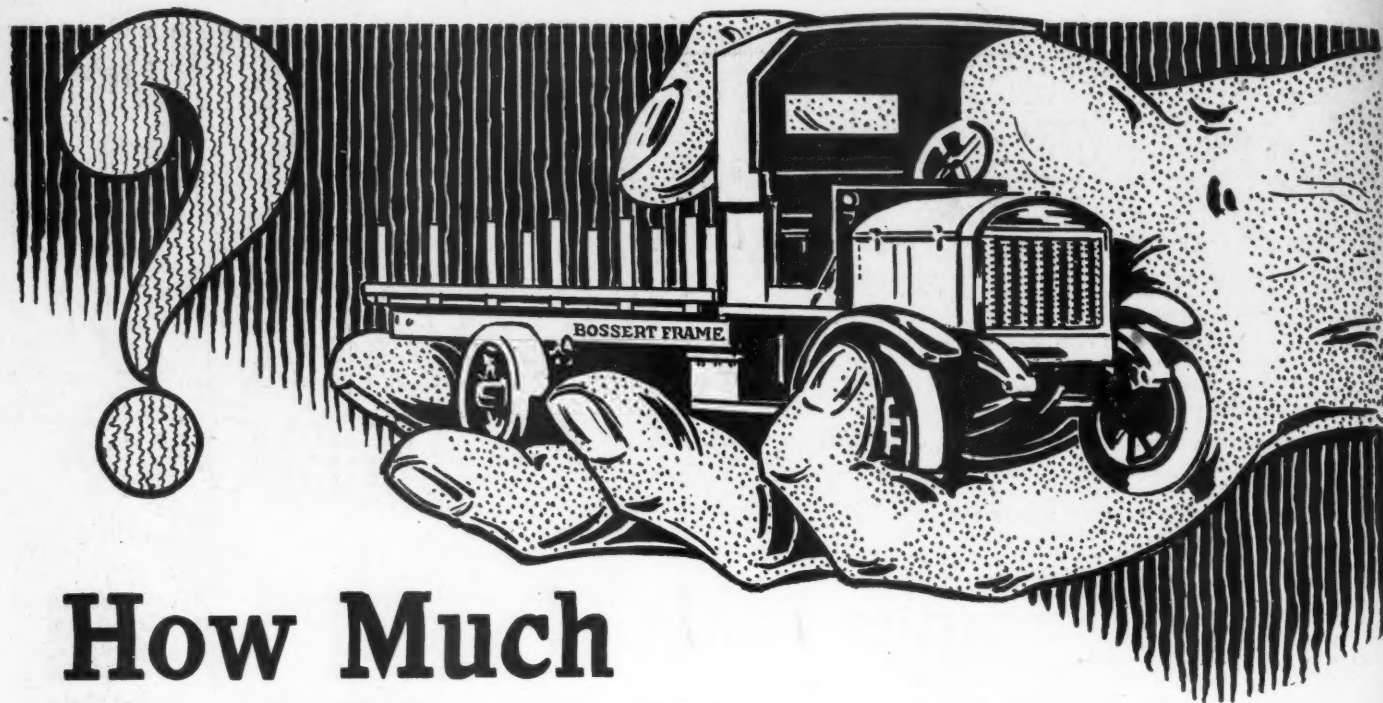
"STANDARD  
OF THE  
INDUSTRY"

# WYMAN-GORDON

## THE CRANKSHAFT MAKERS

Worcester, Mass. Cleveland, Ohio  
Chicago, Ill.





# How Much Does Your Truck Weigh?

Watch the downward curve of truck weights. One manufacturer after another is paring here, cutting down there until former weights have undergone tremendous changes.

How much does *your* truck weigh in comparison to competing makes of the same capacity?

Dealers are beginning to demand lightness in the truck they sell because operating expenses inexorably reveal that bulky trucks are wasteful.

Truck buyers, who know, are chiefly concerned about weight in terms of miles per gallon of gas and oil, tire life and upkeep. They know that motor trucks are similar to motor cars in that judicious lightness makes for easy riding, less vibration and longer life.

Bossert Pressed Steel Parts lighten your truck without decreasing its efficiency in the slightest degree. These parts, of which there are more than 200, are even more dependable and stronger than heavy castings and forgings because pressed steel never breaks nor crystallizes under punishment. Why continue to use heavy castings when Bossert light weight Pressed Steel Parts cut down the operating costs of your truck so considerably? Write us for catalog and complete data.

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Cleveland, Ohio, 611 Citizens Building  
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# BOSSERT PARTS

*for Strength and Lightness*

# ***SPRING PERCH***

## ***TRUCK SPRINGS***

### **Notice to the Trade**

During the current year we have moved into, and have in full operation, our new, large and thoroughly modernized factory at Stratford, Conn. (Suburb of Bridgeport.)

We manufacture exclusively high-grade leaf springs from thoroughly tested approved alloy steels for both commercial and passenger cars.

We employ the most modern methods and in the hardening and tempering processes, use specially constructed rotary furnaces under thermostatic pyrometer control, insuring, thereby, the finest metallurgic condition possible, with absolute uniformity in temper and hardness.

Believing that the best spring is the cheapest, we invite correspondence and will be glad to submit quotations on receipt of specifications and to assist in the proper design of springs for new models about to be produced.

**GET THE BEST**

### **Spring Perch Company**

*Makers of Springs Since 1843*

**Stratford, Conn.**





# G.P.&F. FUEL Tanks



## Give a Thought to Your Dealers

**G.P.&F. SERVICE**  
"KNOWING HOW SINCE '81"

They aim to sell a lot of your trucks, but—

You know what will happen when their customers begin to growl  
about the one weak feature in your otherwise splendid assembly.

The tanks!

You cannot afford to take chances with them.

Before your dealers' enthusiasm gets a chance to wane, have us make  
your oil, gasoline and water tanks. Seamless terne-coated-after-  
manufacture containers on which you and your dealers can absolutely  
depend. *Tanks which will outwear the trucks they serve.*

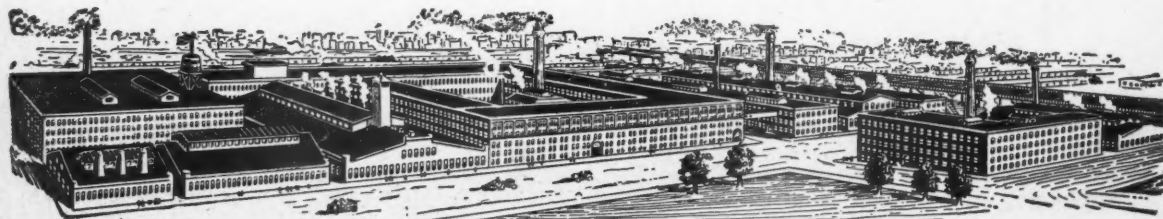
Our huge fifteen acre plant is at your service. Send us your  
specifications.

**GEUDER, PAESCHKE & FREY CO.**

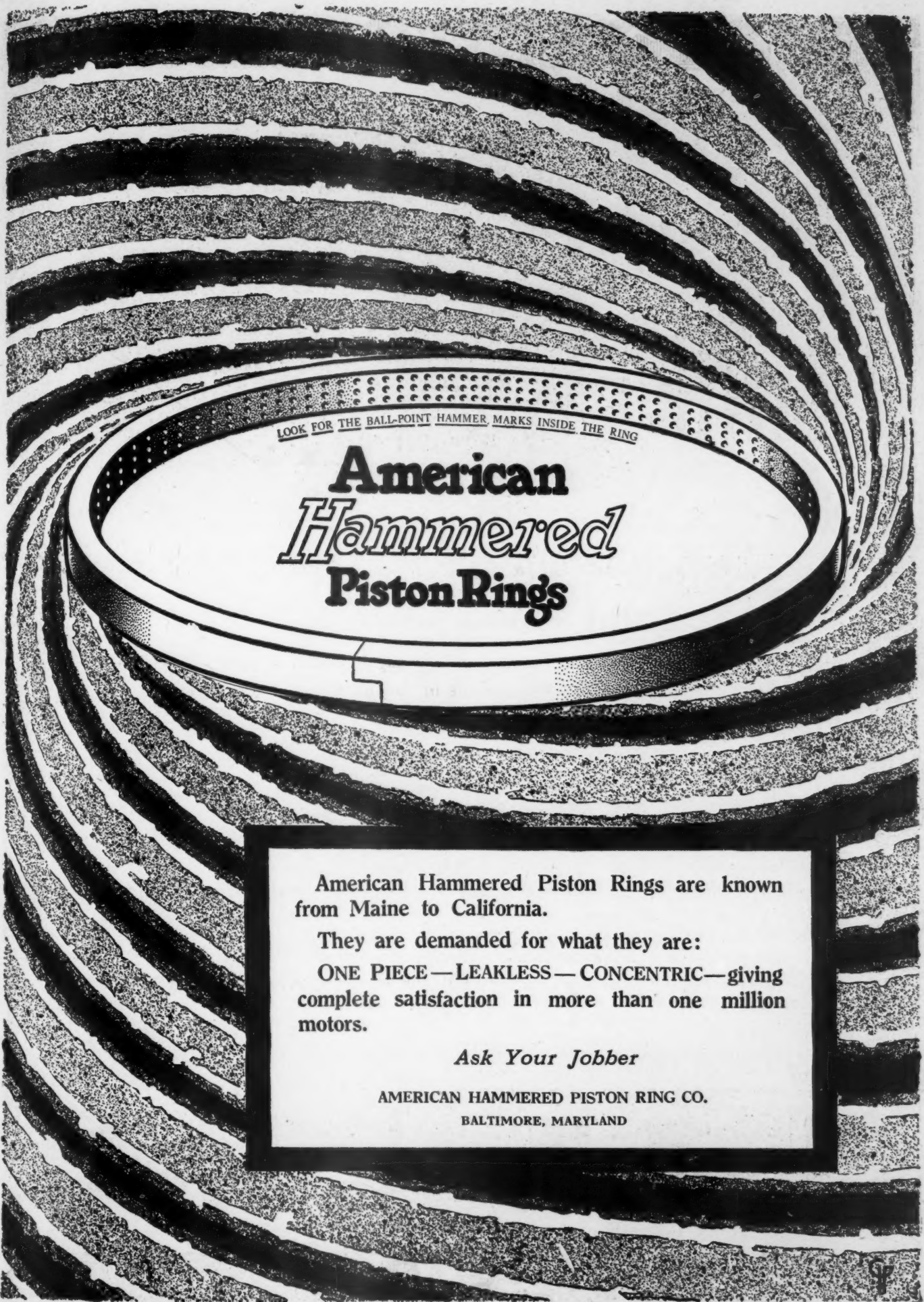
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EXCLUSIVE MANUFACTURERS MAXIM SPECIAL SILENCERS FOR TRUCKS



"Our Fifteen Acre Plant"



LOOK FOR THE BALL-POINT HAMMER MARKS INSIDE THE RING

# American *Hammered* Piston Rings

American Hammered Piston Rings are known from Maine to California.

They are demanded for what they are:

ONE PIECE—LEAKLESS—CONCENTRIC—giving complete satisfaction in more than one million motors.

*Ask Your Jobber*

AMERICAN HAMMERED PISTON RING CO.  
BALTIMORE, MARYLAND





## Dependability, Low Operating Cost and Good Dealer Service

Influence Large New York Coal Concern to Standardize on Selden Trucks

The Powell & Titus Coal Co., one of the largest coal companies in New York City, have standardized on Selden Trucks for their delivery equipment "for four very good reasons," as they put it. And they give the reasons as follows:



*First:* Selden Trucks are especially well adapted for the heavy hauling of the coal business, and therefore can be depended upon to give continuous service.

*Second:* Their operating and repair costs are low.

*Third:* Because of the excellent service rendered by the New York City Distributors of Selden Trucks.

*Fourth:* Standardization on a dependable truck enables mechanics to become so familiar with the construction that much time is saved in making repairs.

The Powell & Titus Coal Co. delivers coal in quantities of 5, 10 and 20 tons to dwellings and apartment houses principally, and the coal has to be carried from the trucks to the basement. In spite of these short hauls and idle time the Company claims to make these deliveries cheaper by their Selden Trucks than by horse teams. They also state that the total cost of actual repairs on all these trucks since they were purchased three years ago amounts to but \$650.00.

This is typical of the records which Selden Trucks never fail to establish. They make permanent Selden users.

*1½, 2½, 3½, 5 Ton Models—All WORM Drive*

**SELDEN TRUCK CORPORATION, Rochester, N. Y., U. S. A.**

# Selden Motor Trucks



## What Makes An Alloy Steel "Commercial"?

*The total cost of the finished product  
of the quality required*



Our book, "Molybdenum Commercial Steels" through the aid of photomicrographs, colored heat treatment charts and other data derived from the commercial production and consumption of several score thousand tons of these steels, shows why they are termed "commercial."

*Copies may be obtained by  
addressing*

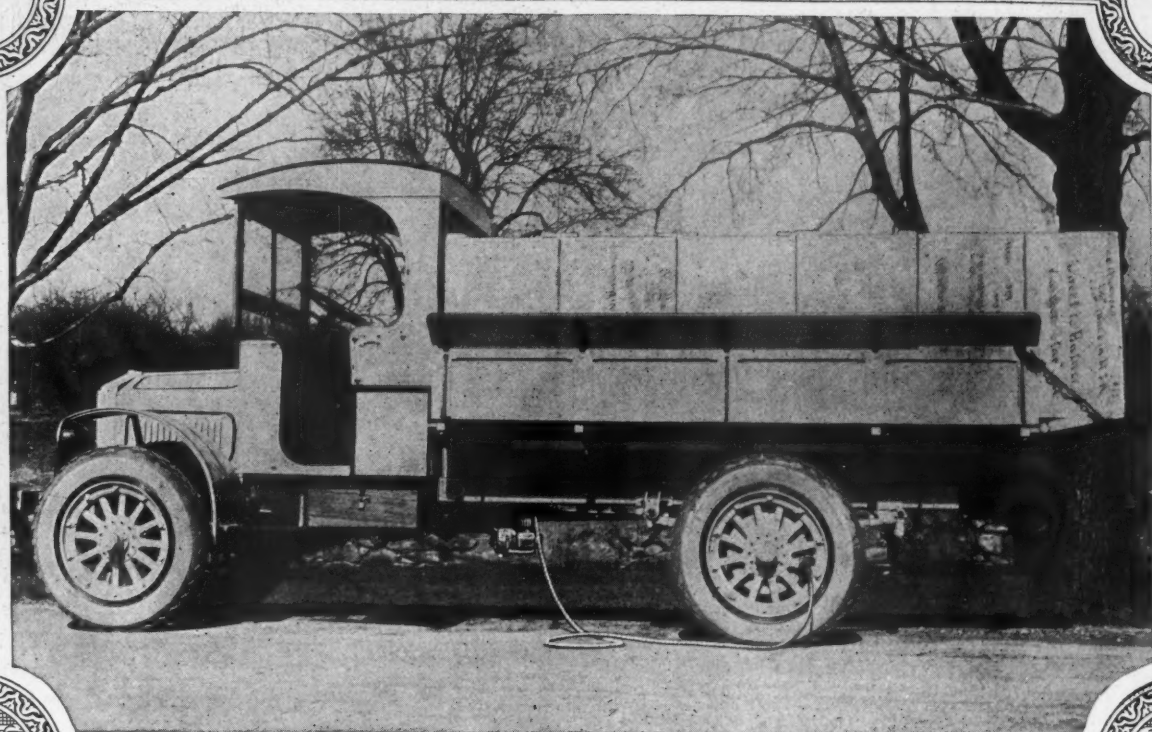
**Climax Molybdenum Co.**  
or  
**The American Metal Co., Ltd.**  
61 Broadway, New York

# Molybdenum Steels

**Easier to Heat Treat  
Easier to Machine  
Dynamically Tougher  
Resist Fatigue —**

**PROVEN IN WAR FOR THE TASKS OF PEACE**





*No Motor Truck or Motor Car is completely equipped that is not equipped with  
a Kellogg Engine-Driven Tire Pump*

## Kellogg Pumps Reduce Tire Costs

**M**OST pneumatic tire troubles are caused by rim-cutting or punctures, which usually are the result of under-inflation of tires. Unless tires are sufficiently inflated to resist the weight of the truck, they are apt to split at the sides. And soft tires offer the least resistance to sharp stones, tacks, glass and other penetrating objects commonly encountered on highways or city streets.

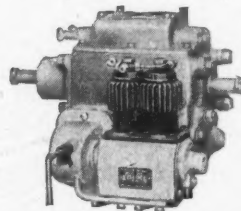
With a Kellogg Pump on the truck, tires can be kept inflated to the right degree of pressure at all times. Rim-cuts are eliminated and punctures are fewer.

Tire costs are greatly reduced.

KELLOGG PUMPS are installed as standard equipment on practically all of the leading makes of motor trucks and motor cars manufactured today.

### CAUTION

*Make sure the Motor  
Truck or Motor Car you  
buy is equipped with a  
KELLOGG Engine-  
Driven TIRE PUMP*



KELLOGG MANUFACTURING CO., Rochester, N. Y., U. S. A.

# KELLOGG

## TIRE PUMPS

# The Lavine Steering Gear

## Gives Continued Satisfaction

Consider the mechanical perfection of the Lavine.

All working parts made of 15 to 25 and 40 to 50 point carbon steel, heat-treated, drawn in oil. Positive external adjustment. Simple, rugged construction throughout. Few working parts. A scientifically correct mechanism instantly responsive to slightest turn or pressure.

Here we have some of the reasons why the Lavine gives continued satisfaction; why the leading truck makers have equipped their product with this trouble-free gear.

Why it will be distinctly to your advantage to consult with our engineers regarding your Steering Gear problems.

Write.



**LAVINE GEAR CO. MILWAUKEE WISCONSIN**



# TWIN CITY TRUCKS

One of the largest factories and a \$7,000,000 organization back Twin City Trucks.

Two models: 3½-ton and 2-ton.

*We invite correspondence from reliable distributors in territories not yet closed.*

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Des Moines, Iowa	Wichita, Kansas
Denver, Col.	Fargo, N. D.
Peoria, Ill.	Kansas City, Mo.
Indianapolis, Ind.	Spokane, Wash.
St. Louis, Mo.	Salt Lake City, Utah

#### Canada:

Minneapolis Steel & Machinery Co. of Canada, Ltd.—Winnipeg, Man.; Regina, Sask.; Calgary, Alta.

#### Export Office:

Minneapolis Steel & Machinery Co.—154 Nassau St., New York City

## Twin City Company

Selling Products of

**Minneapolis Steel & Machinery Company**  
Minneapolis, U. S. A.

#### Distributors:

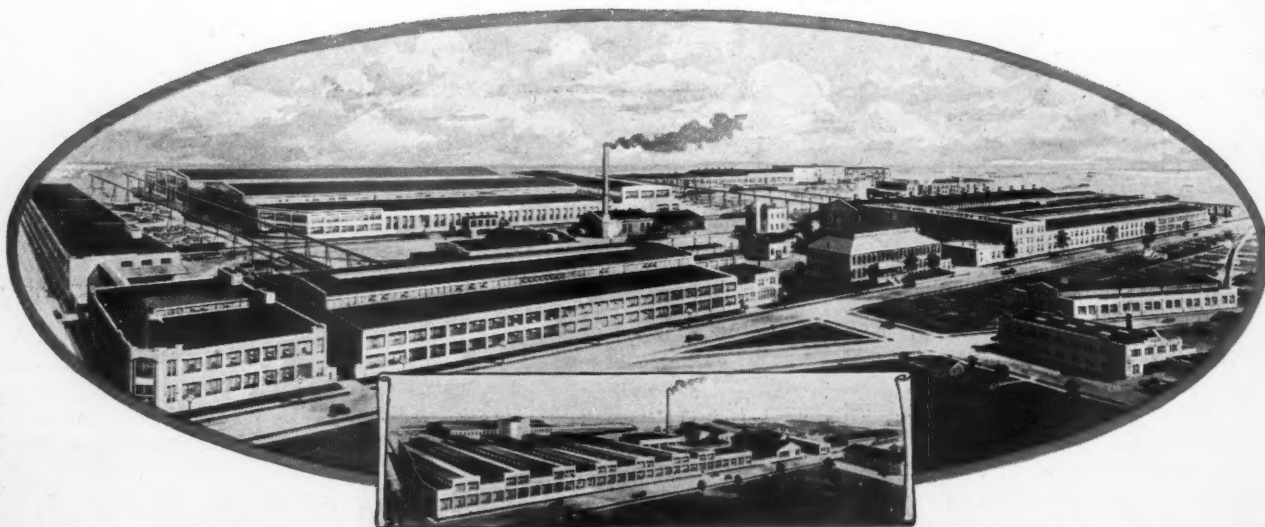
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Baskerville & Dahl Co.—Watertown, South Dakota

Southern Machinery Co.—Atlanta, Ga.

R. B. George Machinery Co.—Dallas, Houston, Amarillo, San Antonio, Texas and Crowley, La.

J. Z. Horter Co.—Havana, Cuba





## THE ONE RADIATOR

# G&O

You want the one radiator, trouble-proof, that will cool your engine most effectively and economically. We have demonstrated to 44 manufacturers, whose products range from giant trucks to aristocratic passenger cars, and from small stationary engines to the Army and Navy warplanes, that that radiator is the G & O Radiator. We can show you just how G & O Radiators will improve your engine cooling, "because of Quality."

**THE G & O MANUFACTURING COMPANY**

New Haven

Connecticut



## The Transportation Question Every Business Executive Must Answer

"Are you bringing your transportation equipment up to the assured demands of this fall and winter?"

The railroad situation is gradually improving, but railroad equipment is admittedly five years behind the business needs of the present.

Good business judgment demands an immediate stock-taking of your present transportation equipment.

Motor trucks are being called upon for a constantly increasing share of the country's short haul transportation. They can relieve your business of a large part of the delay and annoyance incident to the railroad situation with its serious terminal congestion.

By assuming more of the short haul traffic they can help set free to your advantage, the full complement of railroad equipment for long haul and bulk shipments.

Motor trucks will give your business a valuable measure of transportation independence.

### THE AUTOCAR COMPANY

*Established 1897*

ARDMORE

PENNSYLVANIA

*Manufacturers of the Autocar Motor Truck*

# The Commercial Car Journal

VOLUME XX

PHILADELPHIA, SEPTEMBER 15, 1920

NUMBER 1

## Here Are Some Things the Factory Sales Executive and Others Should Do

**A Comprehensive Survey of the Possible Market for Trucks is a Great Aid to the Distributor. Sales Manager Should Have Detailed Knowledge of Every Territory**

By C. P. SHATTUCK

**A**N executive of a Western truck factory while touring through an Eastern state was delayed at a small town of about 4000 population by mechanical trouble. As the garage repairman said it would take about an hour to effect the repair the executive strolled about the streets. Now this official, whom we will call Smith, made it a practice to leave his business at the factory when on pleasure bent. But having noted a number of trucks made by one of his keenest competitors on the roads in the vicinity of the town, and having seen a few more engaged in various vocations, and none of his, he decided to do a little investigating. So he hied to the dealer of his rival and after exchanging the time of day asked casually where the dealer for the Blank truck was located.

"None here," was the reply, "and never has been. The dealer from — (the distributor) was up this way once trying to get a dealer. Yes, he tried to sell me. Liked the truck all right and the price was right but I took on the Brown truck instead. And am selling them, too," this in a cheery tone.

### Why He Picked the Brown Truck

Smith pressed the dealer for a reason for his selecting the Brown truck in preference to his. "Well," was the reply, "when that wholesaler from the distributor tried to interest me he did not offer anything but the truck and the usual discount. Talked a lot about big profits in selling trucks, what a great truck it was and all that old time stuff. Now when the distributor from the Brown truck came around he really had something under his hat."

Some new selling angle, thought Smith. Wonder what is it, and passing a cigar to the dealer remarked: "Am thinking of looking into this truck selling. Wonder if you would advise me, er— about what that chap had under his hat."

"Sure," said the dealer. "Come into my office. Glad to be of help to you." And when seated comfortably the dealer discoursed on the difference between the

Blank and Brown wholesale men, etc. Summed up, Smith found that the Brown wholesale man had made a survey of the territory, was able to point out the lines that should be more intensively exploited, the number and make of competitive trucks, supplied a list of possible prospects, provided data on bodies and equipment, and emphasized the fact that factory sales experts directed the dealer's efforts in a constructive way. And Smith was impressed with the remark made that the factory men got around as did the wholesale man from the distributor.

### Conditions Were the Same

Now it should be explained that Smith was not connected with the sales of his factory but assuming that the dealer he talked with was an exceptional case decided to make a stop in another town sufficiently far to insure it being another distributor's territory. Here he found that the Blank truck was represented but was not being sold while the Brown trucks were strikingly in evidence. Throughout the section Smith found conditions similar; that is, either the Brown or some other make was in the majority while the Blank truck was noticeable by its absence.

What Smith said to the sales manager on his return to the factory and what explanation the sales executive made is not a part of this article but the experience of Smith is quoted to show that in the case of the Blank factory, it was either unfortunate in its distributor representation or the policy was one of selling trucks, its product, and not **THE MARKET FOR THE TRUCK**. In other sections the Blank factory has and is selling its product but in the territory through which Smith toured it is not but **OTHER MAKES ARE SECURING A STRONG FOOthOLD**.

### Why Sales Vary

Had Smith extended his survey to a group of three or four other states through which the writer motored last year analyzing dealer, territory and sales conditions, he would have found conditions similar but he would also have

found spots where the Blank truck was in the majority but in such instances it is safe to assert that it would be found that the dealers were of that type eagerly sought by the factory sales manager or distributor, and that is, **real business men with the available capital and necessary ability to develop motor highway transportation**. They are few and far between in the smaller places if we are to believe the factory sales managers and the distributors.

The writer does not propose to discuss the factory methods of allotting distributor territory other than to say that in many instances the distributor either is given or takes too much territory and that both the factory and distributor lack an intimate and actual detailed knowledge of the possibilities in the territory, actual number and make of competitive trucks and market conditions and market possibilities. And in the case of the territory traveled by the writer last year there was every indication that the allotment was based on area and population rather than on a detailed knowledge of the potentiality of the market other than in the large cities.

### Is He Batting .400?

And many distributors do not know their territory. If his wholesale man closes an associate dealer, and that dealer in a year sells a few more trucks than the wholesale man thought would be possible, then this dealer is classed as a whirlwind by the distributor and held up as an example to other dealers who are not as successful. But does either the wholesale man, the distributor or the factory for that matter, really know whether this successful dealer is batting over .400? It may be that the dealer should have sold considerably more trucks, that the possibilities warranted it if the dealer was advised or his efforts directed towards lines which would yield greater results. It is not unusual to find an associate dealer involved in a campaign to exploit trucks in one or two given industries when greater possibilities await him in another line. The lines the dealer is concentrating on may be well sold.



### Does He Know That?

Now let us pass along to the dealer of the associate type. Does the average associate dealer know how to analyze his market? Does he know how much territory he should take? Does he know who are his competitors or the evils of the trade-in? Can he and will he always advise a buyer what size truck to take or body to instal? Will he try to put over a 5-ton when a 3-ton will do the work as well and more economically, just because of the greater profit in the bigger truck? DOES THE ASSOCIATE OR NEW DEALER KNOW HOW TO APPROACH AND SELL THE BANKS ON THE MOTOR TRUCK MARKET? How many seeking support from the banks make other than a request for financial aid? Why do the small dealers become discouraged and fail? Who is responsible for the large turnover of dealers annually? The dealer, the distributor or the factory?

Right away the writer hears the factory sales managers who read this article remark that it is up to the distributor to appoint the right type of dealer and to see that he runs true to form. And the distributor will pass the buck along to the associate dealer but to whom can the latter pass the buck? Why to the distributor, of course. And he in turn can, if he desires, pass it back to the factory. But all this buck passing is not getting us anywhere, is not selling trucks and it is for the purpose of selling trucks and the work they do that the factory operates.

### Passing the Buck

Speaking of passing the buck, why, the writer is going to indulge in the habit and pass it, insofar as who should shoulder the responsibility for placing the merchandising of trucks on a sound stable basis is concerned, by stating his belief that inasmuch as the distributor does not and the associate dealers do not appear to be capable of doing it themselves, that the manufacturer will have to step on the starter pedal. And after the engine is operating he will have to see that it is kept running sweetly. TO DO THIS HIS SALES EXECUTIVE MUST HAVE A DETAILED KNOWLEDGE OF HIS DISTRIBUTOR'S MARKET AND DIRECT THE EFFORTS OF THE DEALER. And if the sales executive has complete knowledge of actual conditions at every point in the distributor's territory, its potentiality, its buying power, market and hauling conditions, its capacity truck requirements, competition in detail, condition of highways, etc., he should be able to check both the efforts of the distributor and the dealer and to arrive at a very fair estimate of the capability of each by checking potentialities against sales.

### Wonderful Opportunities for Sales

To obtain such data will require a national wide survey, if the factory's distribution plans are national, and such research work will involve considerable

time and expense. But it has been done and the writer was given the privilege of examining the mass of data and spent considerable time analyzing the report which was surprising in that it revealed concrete proof THAT WONDERFUL OPPORTUNITIES FOR SELLING TRUCKS ARE AVAILABLE IN ALL SECTIONS OF THE COUNTRY, AND THAT THE SURFACE OF THE AGRICULTURAL MARKET IS NOT EVEN SCRATCHED.

It is to be regretted that the writer is not at liberty to state other than generalities from the report, is not able to give concrete cases of the potentialities in some sections to prove his contention of sales possibilities. What the survey revealed was that it points out to the distributor or prospective distributor the real possibilities of his market from the viewpoints of the actual present necessity for motor trucks. It supplies detailed reasons for the territory's ability to buy from the viewpoint of its actual manufacturing conditions, its wholesale and retail merchant conditions and its rural and farm conditions.

It shows the development possibilities as a whole and in detail based on the actual number of competitive trucks, and this information makes it possible for the selling executive to sell smaller distributing territory. Because of an actual knowledge of detailed conditions and possibilities, the factory can bring about a more intelligent and intensive development of smaller territory from distributors.

### Controlling Dealer Sales

The data, if properly utilized, should make it possible for the factory to control the sale and effort of distributors and dealers to the point of stepping up their stock of trucks in order to properly and intensively cover the territory. This can be done in the smaller communities, the dealers' territories because of an actual knowledge of conditions by the factory.

The information supplied the distributor makes it possible for him to meet his potential dealer on his own ground, to know more detailed facts about the dealer's market selling possibilities, and the ability to answer objection or meet dealer argument in connection with sales. It should enable the distributor to direct the sales efforts of his dealers and to point out those lines which should be more extensively worked. Detailed information points out to the distributor the necessity of establishing associate dealers at points which, seemingly important, are centers of the important implement buying and agricultural districts, and should show the dealer in the smaller communities the really IMPORTANT POSITION HE HAS IN THE DISTRIBUTION OF MOTOR TRUCKS.

### Selling the Banker on Truck Market

The distributors and dealers who must go to the banks, or to outside agencies for their finance can, with the data referred to, present an actual argument founded on actual market demands rather than just a general request for backing

based on their individual abilities and reputations as business men.

The survey was made by Frank J. Sheridan, formerly of the Department of Commerce, Bureau of Foreign Markets, and who for 20 years has been engaged in industrial surveys for the Government. Some idea of the detail may be obtained when it is considered that there are 133 separate and distinct market reports for the 133 counties included in the Chicago district, and in addition studies and presentations of the manufacturing and mercantile conditions in the principal cities of the districts. One of the interesting features of the Chicago report is that its distributing district is far more productive, has greater efficiency, obtains greater prices and has a purchasing power greater than any other group of the same number of states.

To quote from the report and showing the percentage of total, using trucks. "There are 33 groups of vocational industries, showing the number of concerns in each industry from which the information was secured, the number of such concerns in each industry using motor trucks and the number and make used. Of the total of 101,497 concerns in the 33 groups, 8334 used trucks or 8.2 per cent of the total. By vocational groups the proportion of each total using trucks in those named was as follows in the State of ———."

Creameries and dairies .....	18.5
Coal dealers .....	9.1
Department stores .....	48.0
Bakeries .....	5.4
Groceries .....	2.0
Furniture .....	10.6
Laundries .....	17.0
Iron and steel .....	45.0
Machinery mfrs. and dealers .....	62.0
Professional haulage .....	61.0
Meat dealers .....	2.0

The analysis of the New York and Chicago possibilities for trucks favors the latter, and that in Chicago 60 per cent of all haulage is by horses.

The information dealing with the smaller territories is most complete giving as it does the suburbs of towns, number of families, trades with telephone numbers, etc. The capacity and type of trucks is also dealt with throughout.

### Potentiality of Farmer Market

While it is acknowledged that there are enormous sales to be made in the agricultural districts the report shows the farmer market to be practically a virgin one. One of the possibilities is shown by an excerpt as follows: "In the 133 counties of this district there are 196,251 farmers with farms of 100 acres each and over, and in this group of large farms are 55 per cent of all farms in Illinois and 68 per cent of all farms in Iowa. In the 133 counties there are but 3148 motor trucks or one motor truck to each 62 farms. In 62 counties in ——— there are 159 farms for every farmer owned truck, 115 farms to every farmer owned motor truck in the State of ——— and

32 farms for every farmer owned truck in the State of ———." The number of such large farms and the number of farmer owned trucks are shown separately for each county of the district and their purchasing power.

An analysis of a certain rich farming county is quoted to show the proportion of farmer owned trucks to the total. Letters are used instead of the name or make and those with an asterisk indicate converted passenger cars, attachments, etc.

Makes	Farmer Owned	Total
*A	3	142
B	—	5
*C	—	3
D	—	2
*E	—	7
F	—	9
G	—	4
*H	—	10
I	—	2
J	—	1
K	5	37
*L	—	5
—	—	—
12	8	227

\*Converted passenger cars, attachments, etc.

The report shows that only 4 per cent of the total are farmer owned and that 73 per cent of the farmer trucks are converted passenger cars, units, etc.

A county in the West shows eight makes with a total of 560 cars of which number 100 are farmer owned or about 15 per cent. The number of converted passenger cars, etc., is 70 per cent of the total.

Makes	Farmer Owned	Total
*A	84	449
B	4	16
C	4	24
D	—	6
E	3	17
F	—	5
G	—	6
*H	5	37
—	—	—
8	100	560

\*Converted passenger cars, units, attachments.

These cases cited do not indicate a county affording unusual opportunities for selling the farmer but are average and in many instances the report showed even greater possibilities.

#### Analyzing a County

In analyzing a county Mr. Sheridan, who has access to data through his former connection with the government and acquaintances, gives in detail the crops raised, value, market price and comparative prices from 1910 to the present time. The data includes the time of year the crops or products are moved, the amount, and that consumed and sold. This information should be of value to the dealer for it enables him to map out his

sales campaigns according to the seasons. The comparative prices received by the farmer are given to show the dealer the potentiality of the farmer market. Road conditions are also dealt with. Two extracts of the report and dealing with two counties selected at random shows the following:

—County, Illinois.

Area—1146 sq. miles

Population—91,851

Manufacturing establishments—90

Total miles, highways—2006

Improved highways—33 per cent

No. farms, 100 to 1000 acres—4282

No. farms, less than 100 acres—1290

Total acreage, farms—662,756

Value land, buildings, implements—\$11,911,820

Per cent implements and machinery—1.7

Products sold 1919—\$18,193,848

Number farms owning trucks—25

Number of makes—16

Ratio farmer owned trucks one to 121

—County, Wisconsin.

Area—1251 sq. miles

Population—83,275

Number of families—16,655

Number of factories—122

Value, factory products, yearly, \$6,000,000

Total miles, highway—2259

Improved highways—603 miles

Total number of farms—6058

No. farms 100 to 1000 acres—3485

Value, land, buildings, implements—\$78,010,801

Total number of acres—736,340

Value corn, oats, wheat, barley, potatoes, tobacco—\$19,705,910

Cheese factories—105

Value, dairy products and by-products—\$3,153,140

Number farms owning trucks—107

Ratio farmer owned trucks one to 32

Numerous excerpts could be quoted to show the possibilities but lacking the name of the county or town would be valueless to the dealer and reader. The interesting thought in connection with the survey, is that its use by the company that authorized it will bring about a closer contact between the factory, distributor and dealer and should be the means of aiding the dealer solve many of his problems to say nothing of bettering service conditions for with contact between the small dealer and factory established it is obvious that a better understanding will be had of each other's problems.

The writer wishes to acknowledge the courtesy of Sheridan, Shawhan & Sheridan, of New York City, who had charge of the survey, in allowing him access to the records. The survey was authorized by the Bethlehem Motors Corp., Allentown, Pa., and the data will be supplied its distributors and dealers.

## How Truck Manufacturers View Present Situation

By A. V. COMINGS

**P**RESENT conditions in the motor truck industry are far from satisfactory, nevertheless the manufacturers as a rule are taking the present slowing down philosophically, are trimming their production to meet conditions, and are clearing the decks for the resumption of business which they universally profess to believe will come with the fall and winter months. Sales during the first half of 1920 were so great with most companies, that even with the present lull, they figure that this year's business is going away beyond the record made in 1919.

Just how much the present curtailment amounts to is very hard to judge, for the lull has affected different manufacturers in different degrees. Some, who have been fighting for months to get enough parts to carry on a balanced schedule of output, welcome the present lull as a means whereby they can catch up on orders. Others, who have been more nearly keeping up with sales, find it necessary to cut production accordingly. Judging from the information at hand from many sources, I believe that there has been a cut of at least fifty per cent in the total production of trucks.

#### Weeding Out the Undesirables

There has been no general layoff of men in the industry, although many manufac-

turers are taking this period to weed out the undesirables in their organizations. And the truck manufacturers have found, as have employers in other lines, that the present situation is not without its blessings, for men, faced with the possibility of a layoff, are doing much more satisfactory work. In fact, several manufacturers have found that the men remaining on the job are about 25 per cent more efficient than when there was a labor shortage.

The present lull has emphasized to the manufacturers the necessity of strengthening what has always been their weakest spot, that is, their selling organizations. With the big demand which marked 1919 and the first half of 1920, almost any kind of a dealer could pass trucks on from the manufacturer to the ultimate user, especially with the banks standing ready to finance almost any kind of sale. When the banks shutdown on their easy loans, however, and the prospect list began to narrow, dealers found that many of the salesmen they had considered "stars," were merely flickering candles, and had very little real sales ability. Faced with the necessity of going out and really selling motor trucks, these dealer organizations have not been able to meet the test. On top of this, the banks have not only stopped financing motor truck sales, but they have also curtailed their credit to dealers, and the result has been disastrous to many



dealer organizations. Some manufacturers, who have built up their dealer organizations with more regard to quantity than quality, have suddenly come to the realization that they have few dealers who are equipped both financially and from a salesmanship standpoint to go out after business. These companies are hardest hit.

#### Conservative Manufacturers Lose Few Dealers

Among more conservative manufacturers, who have been careful in the selection of their dealers and who have left territory open rather than cover it with a mediocre dealer, there has been less grief in the present situation, and these companies are nearest their schedules on actual production. They have lost few, if any, dealers, and they are still able to get considerable business because their dealer organizations are better equipped with real salesmen, and are better financed.

This much is certain, the present lull has taught both manufacturers and dealers the necessity of educating motor truck salesmen and of merchandising trucks along very definite and clearly defined lines. Dealer organizations of the right type, who have recognized the necessity of having real salesmen on the payroll, who have not made long time sales with small initial deposits, and who have not been tempted into rash trades merely for the sake of disposing of new trucks, are riding easy these days and will be ready for the resumption of business in the fall.

The other kind of dealer organization is having hard sledding, and many have fallen by the wayside.

#### Credit Situation is Becoming Better

That motor truck demand will again be insistent and large with the coming of autumn and winter months is almost a certainty. Credit restrictions are even tighter today than they were a month or more back, as far as motor truck paper is concerned, but with the moving of the crops and the return of much of the crop money to circulation, this situation is almost certain to ease up. This much is true, the crops this year are almost universally bumper crops, and if the railroad companies can only do their share, there will be plenty of money in circulation this winter.

There is a slight improvement noticeable in the railroad situation, though not enough to cause any national celebration as yet. Until the crops are moved, there will be no great car service change in the east. The raise in rates granted the railroads will have its effect within a few months, however, as orders have already been placed for cars and locomotives, and more are on the way, that will begin to make a difference when deliveries are made.

An improvement in rail service is absolutely essential to a complete easement of the credit situation, for under present conditions there is a tremendous amount of money tied up in goods and materials in

transit, and in last year's crops yet unmoved. In Iowa alone, nearly 40 per cent of last year's crop is still on the farms and in elevators.

The rail situation is not an unmixed hardship for the truck manufacturer, as it has been a great factor in pushing truck sales for inter-city and terminal hauling, and this demand still maintains. It would seem that an intelligent and determined co-operative effort on the part of truck manufacturers to foster and develop this type of business would be well worth while at this time.

#### Truck Manufacturers Optimistic

As to the future of the motor truck business, I have found nothing but optimism among truck manufacturers. Many look upon the present slump as a good thing for the business in many ways, as it will weed out many undesirables, and will bring home to dealers generally the necessity of good business methods in handling truck sales, both in financing them and in sales plans. It has shown the manufacturers, too, that more care must be exercised in the future in the selection of dealers, if a permanent organization is to be built up, and this lesson will doubtless have its effect in stabilizing the business in time to come.

Retail dealers already report a renewed demand, gradual, it is true, but very noticeable, and the industry generally is looking for a fair autumn business, with real demand again in evidence with the coming of 1921.

## The Pneumatic Cord Tire and Its Relation to the Motor Truck Industry

### Conversion of the Solid Tire Equipment to Pneumatic. Changes to be Expected in the Design of Trucks Due to the More Extended Use of Pneumatics

**I**N converting the present-day solid-tire-designed truck to pneumatics a number of factors must be taken into consideration. In the first place each individual job should be carefully considered and no change over should be recommended unless some definite result are to be obtained.

Take for instance, the case of an inter-city hauling concern that desires only to increase the radius of travel of its trucks per day. In this particular instance the road conditions may not be of the best, so that the use of the pneumatics will more than offset the extra cost of installation, by assuring greater average speed and less wear and tear on the vehicle.

Another truck owner may want better traction during winter months, when the roads are snow covered, whereas in summer or during the greater part of the year his present equipment is giving perfect satisfaction. In such a case the truck dealer or tire dealer should thoroughly explain to his customer the advantages to be derived from pneumatics on account of the lesser strain on the vehicle, greater radius of service and the increased comfort of the driver all year round. In so

doing the owner will feel that he is benefiting from the use of the new installation and will know that he is getting his money's worth.

On the other hand if he were sold primarily on the advantages of increased traction the chances are that he would feel sore when he finds that some of his other vehicles are doing just as good with their present equipment during the greater part of the year. And this condition would become more serious especially if the owner does not keep accurate cost figures. There is a big demand for pneumatic cords, but this demand will not increase if the truck or tire dealer does not use discretion in recommending change over.

#### Undersized Tires Must Not be Used

Another thing that the dealer should not consider for a moment is the application of tires that are undersized. The right

This is the second of a series of articles on the subject of pneumatic cord truck tires. The first appeared in our August number.

size of tire is of paramount importance. If an owner insists that a certain size be applied which the dealer knows by his own judgment will not stand the gaff, it is far better to lose the order than to lose the goodwill of the customer.

The tire companies unanimously agree that a great deal of tire mileage is wasted yearly because inadequate sized tires are used.

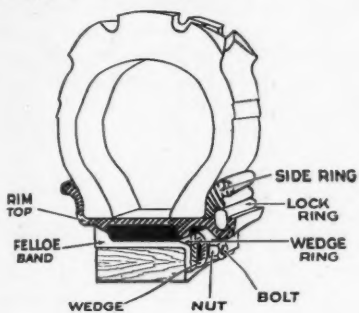
#### Cutting Down the Wheels

Those trucks which are logical prospects for changing over to pneumatics are now operating on one of the following three tire equipments; viz: passenger-car size pneumatics, dual pneumatics and solid tires. In every case it is necessary to cut down the wheel diameter as all truck pneumatics are made in one size of wheel diameter which is 24 in. Therefore, it becomes necessary to cut down the existing wheels or in the case of metal wheels to replace the same with new ones. On the 10-in. tire the tire makers recommend steel wheels.

The cutting down of the wood wheel is not a job which should be attempted unless the dealer has his own wheelwright shop. Otherwise the work should

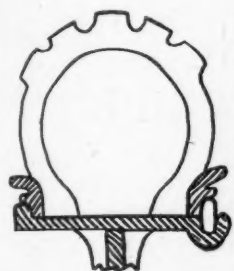
be sent out to a good shop where expert work is done and where the work is handled promptly. Many bad jobs have been done in the past in this respect so that the tire as well as the truck companies recommend that the wheels be sent back to the factory. However, this also has its disadvantages so that the dealer will do better by getting in touch with a responsible local concern.

Care must be exercised in cutting down the wheels that proper instruction is given as to whether the wheel is to carry a demountable or a detachable rim. The two types of rim equipment for holding truck pneumatics are shown in the accompanying illustrations.



The Two Types of Rim Equipment for Holding Truck Giant Pneumatic Tires.

Above is the demountable rim, the parts of which are named. When the nuts of the wedge clamp are fastened the rim simply slides off the wheel felloe together with the tire. Below the so-called detachable rim design is illustrated.



It will be noted that the demountable type requires a smaller size of felloe than the detachable. How these wheel diameters differ in connection with detachable and demountable rims is shown in the accompanying table, which shows wood wheel dimensions using Goodyear detachable and demountable rims:

Goodyear Detachable			
Size	Wood Wheel Dia.	Felloe Width	Felloe Thickness
36x6	23.62	4 1/2	1 5/16
38x7	23.56	5 3/4	1 5/16 to 1 3/8
40x8	23.37	6 1/4	1 3/4
*42x9	23.37	6 1/4	1 3/4

Goodyear Demountable			
Size	Wood Wheel Dia.	Felloe Width	Felloe Thickness
36x6	22 1/4	3 1/4	1 5/16
38x7	22 1/4	3 29/32	1 5/16 to 1 3/8
40x8	22 1/4	4 1/4	1 3/4
*42x9	22	4 1/4	1 3/4

\*The 42 x 9 size is used on a 40 x 8 rim. The Goodyear company recommends steel wheels for the 44 x 10-in. tire. The diameter of the rim, however, in each case is the same.

Each type of rim has its advantages. The detachable rim is lighter in weight and lower in cost. The demountable rim permits of easier application and permits the carrying of an inflated spare. The demand at present seems to be for the demountable type as it does not necessitate pumping while on the road. On the

other hand it requires just as much work on the part of the operator to remove a tire from either type of rim. Which type will predominate in the future is an open question.

#### Rim Standardization and Rim Sizes

The fitting of pneumatic tires to trucks calls for a certain number of standard rim sizes. The Tire and Rim Association has agreed on the following sizes:

34 x 5	38 x 7
36 x 6	44 x 10

It is also proposed to standardize a 42 x 9-in. rim. The above sizes can practically be agreed upon as standard sizes for truck tires.

In figuring upon these rim sizes the tire manufacturers have simplified the situation by making it possible to use some of the standard sizes as an oversize on a similar size rim. For instance, the 40 x 8 can be used as an oversize on a 38 x 7-in. rim, while the 42 x 9 can be used as an oversize on the 40 x 8-in. rim. The first column of the following table shows the rim sizes and the standard size tires used on the rim, whereas the second column shows the oversize tires which can be used on the rim sizes shown in the first column:

Standard Tire & Rim Size	Oversize Tire
34 x 5	36 x 6
36 x 6	38 x 7
38 x 7	40 x 8
40 x 8	42 x 9

From the foregoing it will be noted that the oversize tire is really a standard tire suitable for the lower size rim.

Although the tires are interchangeable it does not follow that the rim is interchangeable with the wheel. This is due to the fact that the rim manufacturer's have spaced the beveled surfaces on the inner side of the rim different distances apart on the different sizes of rims and the wheel makers have had to machine corresponding surfaces on the felloe for this space to bear upon, therefore, making it impossible to interchange different sizes of rims. In other words, it makes it impossible to place a 40 x 8-in. tire on a wheel intended for a 44 x 10-in. tire. Undoubtedly, at some future date the rim manufacturers will standardize on the manufacturing of these rims so that the rims can be interchangeable and machining operations in wheel manufacturing simplified.

#### Inflation Pressures and Proper Loads

It is not our purpose to here give recommended pressures advocated by the various tire companies as these are included in the tire specifications and price list given elsewhere in this issue. These pressures vary somewhat but in the main are fairly uniform. The tire manufacturers, however, recommend that the tire should never be loaded in excess of the figures given in the column of carrying capacities for the reason that continuous operation with a maximum load and maximum air pressure will shorten the life of the tire. This is so for the reason that it is practically impossible to maintain a maximum air pressure and if the user en-

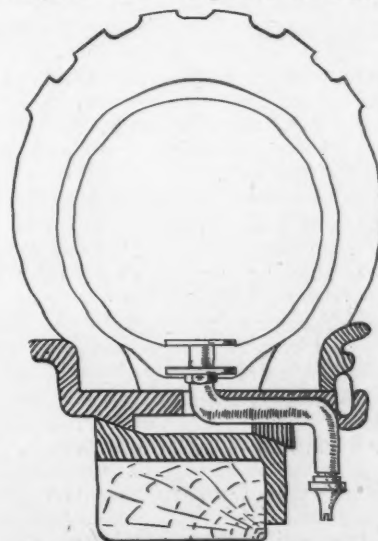
deavors to maintain this pressure, he leaves no factor of safety for the tire. In other words when the air pressure is reduced just a few pounds the tire automatically becomes overloaded. This brings us back to the advice given in the former paragraph, that if the maximum load be carried it is better to use oversize tires.

It has been found by actual tests conducted by the tire manufacturers that pneumatics give best results when deflected 12 per cent under load, which means 12 per cent of the height of the tire above the rim. The advantages of the pneumatic tire in this regard is that it can be changed to accommodate the load. However, it is impracticable to change the pressure every time the load is changed, so that at least one tire company does not sanction any variation in pressure but has decided upon definite figures for the pressure and load on the various sizes it manufactures.

Incidentally, however, actual experience has shown that the average pneumatic tire is not overinflated, in other words the pressure is not kept up to maximum and is allowed to fall below the maximum or below the recommended pressure. A 20 per cent loss of air is dangerous and should be remedied immediately.

#### Some Other Things to be Considered

The conversion from solid to pneumatic tires does not include the transformation of the wheels alone but a number of other things will be brought to the attention of the dealer who is doing this work. Where a truck is designed throughout for solid tires, it is logical that the application of pneumatics will create conditions which, in the beginning, are not noticeable, but which will become apparent later on. Take, for instance, the engine speed. When the wheels are suddenly changed from a smaller diameter to a larger one and the speed of the truck increased from, say 12 to probably 24 miles per hour, the engine speed naturally is increased proportionately. The increased speed in some cases plays havoc with the engine bearings and if the engine is not watched



One Type of Offset Valve Used on Large Pneumatic Truck Tires to Make Placement on the Rim Easy

When this type of valve is used the tire need not be lifted so high in order to get the top of the valve clear of the rim and then into the hole through which it extends. This illustration also shows the demountable rim with the bevel seat.



carefully the chances are that burnt-out bearings will result in a short time. Therefore, in order to obtain the best possible results with the pneumatic tire such a truck must either be fitted with an extra gearset which will take care of the increase in the speed desired or the engine should be replaced with a large one.

There is quite a difference between an engine design to drive the truck up to a speed of 25 miles per hour from a standstill within 300 yards and the same engine

formerly used for solid tires; some have increased crankshaft speed; in others the gear ratio has been changed, but we have yet to see anything radical in design which shows a pneumatic truck job in which none of the ear marks of the solid tire vehicles are left.

#### Saving in Weight

One of the biggest factors and advantages of the future pneumatic tire job will be the saving in weight. This means that



#### Six-Wheel Truck With Trailer on Pneumatics

In experimental runs on level roads near Akron this outfit made 18 miles an hour. Engineers are now working on equipment to brake both trucks at the same time. This is regarded as essential to insure practicability of the job in negotiating hilly country. In test runs six-wheeler carried loads ranging from 16,000 to 20,000 lbs., and trailer carried 8,000 to 12,000 lbs.

being required to move the same load from a standstill to a speed of but 12 miles per hour in the same distance.

Different gear ratios in the rear axles may also be necessary. Oiling of the engine must also be looked into and with increased crankshaft speed full force-feed lubrication will be essential with the higher engine speeds in order to insure proper oiling of the bearing surfaces.

This simply goes to show that some of the present-day trucks are successful when changed over to pneumatic tires and others are not. With the redesigning of trucks to be fitted for pneumatics the designer must give these matters attention.

The most important changes in truck design and equipment which may be expected from the extended use of the pneumatic tires includes the following:

- (a) Lighter weight trucks, the effect being pronounced on unsprung parts.
- (b) More powerful engine or greater range of gear reductions to accommodate the greater speeds.
- (c) Increased lubrication facilities for engines, if their crankshaft speed is increased to give greater truck speeds.
- (d) Power tire pump driven from the truck transmission gear box.
- (e) Provision for carrying a spare tire.
- (f) Development of a truck jack capable of raising the truck under load which has a flat tire to the necessary height.
- (g) Better braking facilities to hold a loaded truck traveling at high speeds.

The foregoing paragraph shows that a great amount of thought must be given to the future design of trucks before they can be considered as special pneumatic jobs. There are a number of trucks on the market today which are claimed to be designed for pneumatics and which, to all appearance, fulfill the requirements and are giving excellent service. Most of these have the same engines that were

the whole vehicle from radiator to rear axle will have to be redesigned so that a truck which carries a load of say 5000 lb. and weighs 6500 lb. will be redesigned to weigh 4000 lb. and carry a load of 7000 lb. or even better.

With the general use of pneumatic tires on trucks a great many changes will take place in the garage and service stations. Better garage appliances will be needed, such as air compressors for taking care of the giant pneumatics. These compressors will have to be capable of giving pressures up to 150 lb. and forward a sufficient volume of air so as not to take much time in filling the large tires. Improvements will be necessary in the design of tire valves. Special jacks for large pneumatic tires will be required as the average jack is not capable for raising the giant pneumatics sufficiently high enough. Because of the greater distances for which the truck must be raised or lowered when tire trouble is experienced, jacks should have a height, when at their lowest point, of not over 9 in. Jacks should have a lifting range of at least 12 in. and its height should not be less than 22 in. at the maximum. The jack manufacturers have designed jacks of this type and others are being contemplated.

(To be continued)

## How to Repair Giant Pneumatic Inner Tubes\*

THE methods used in the repair of the heavy pneumatic or truck size inner tubes are very much the same as those followed in the repair of the smaller sizes. However, due to the greater thickness of the wall of the large tubes, the time of the cure must be increased in order to properly cure the repair. Better results can be obtained by using G-170 stock in place of G-180 for truck tire tube repairs.

In cutting out around a break the opening should be kept as small as possible and should be beveled, making the top of the hole somewhat larger than the bottom. The repair should be carefully buffed, and the inside of the tube should also be buffed with a rat-tail file



Broken Valve Hole, Showing Crack in Hole



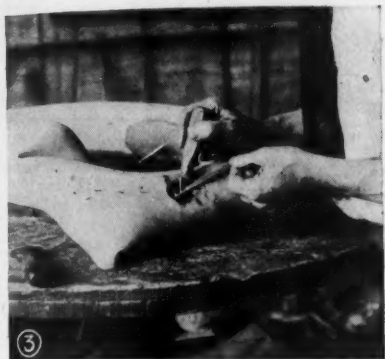
Inserting Cured Back Stock in Old Valve Hole

for a distance of about one and one-half inches all around the hole. Use C-25 cement, applying one fairly heavy coat around the outside of the hole and also on buffed surface of the inside of tube.

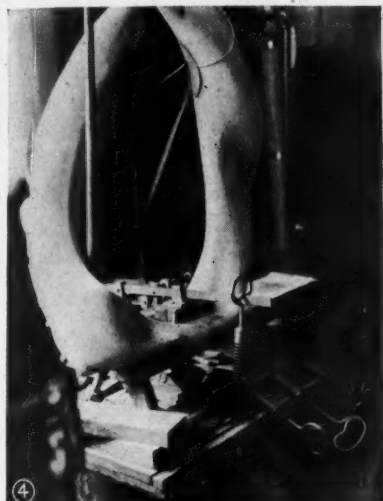
#### Repairing Inside of Hole in Tube.

Heavy gauge G-190 cured back stock should be inserted through the break by means of a pair of sharp-nosed pliers. This patch should be cut large enough so

\*This is the beginning of a series of articles dealing with the methods of repairing pneumatic cord truck tires, as recommended by the Goodyear Tire & Rubber Co.



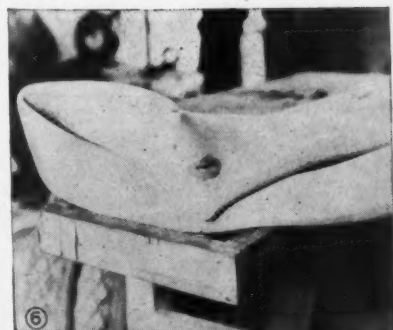
Filling in Old Valve Hole With New Stock (G-170)



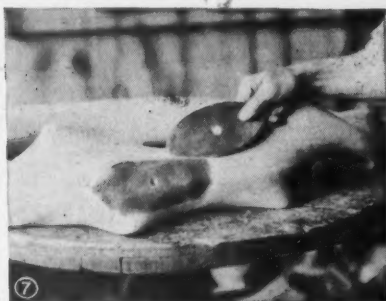
Curing Repair in Old Valve Hole



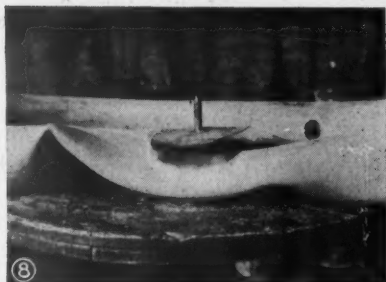
Removing the Damaged Valve Stem Through Hole Cut in Tube for This Purpose



Hole in Tube Cut, Buffed and Cemented, Ready for Inserting (G-190)



New Valve Hole Cut in Tube, Slightly Smaller Than Valve Stem



Valve in Place Ready for Putting on Valve Patch



Stitching Down New Valve Patch

that it will overlap the break by one inch all around. Forcing the G-190 through the hole in the tube can be facilitated by

### The Electrical Process of Retreading

By the electrical process, a fully cured retread band is vulcanized to the carcass of the tire by an electrical vulcanizing unit. This unit consists of extremely fine and flexible wires placed on a 45-degree angle between two plies of white under-tread stock.

According to the accessory and repair materials division of the Goodyear Tire & Rubber Co., of Akron, Ohio, the electrical vulcanizing unit is placed directly under the fully cured retread band. Under the unit in turn comes the breaker fabric and cushion gum.

The electrical unit, breaker and cushion gum are made to fit every size of tire, including the truck size pneumatics, and are purchased in this way.

A curing tube is used to secure pressure from the inside of the casing. Negative pads (used in place of soapstone) and dry crosswrap are employed to secure even pressure on all parts of tread during cure.

benzining the stock, and slipping it through the hole while still damp. When this is done great care should be taken to hold the G-190 away from the cemented surface inside the tube until the benzine has completely evaporated. The patch should then be stitched down, with the uncured side of the G-190 placed against the cemented surface of the tube. This is important.

Fill the hole with G-170, cutting it off in thin strips and stitching down carefully so that no air is trapped. Build up the repair so that the fill is slightly higher than the tube surface. Cure on a hot plate with a piece of holland over the repair.

### Longer Time for Cures of Large Tubes

Six-inch and seven-inch tubes should be cured for twenty-five minutes at sixty lb. steam pressure, and the eight, nine and ten-inch tubes for thirty minutes at sixty lb. pressure.

### Replacing Valve or Repairing Broken Valve Hole

When it is necessary to put in a new valve stem, the old one should be pressed back into the tube and a hole cut in some part of the tube, large enough to permit removing the old valve and inserting the new one. This hole should be cut on a bevel and after the valve replacement should be repaired the same as any other cut, as previously described.

If the valve stem hole is damaged it is better to cut a new hole for the valve in some other part of the tube than to attempt to repair the old location. The new hole should be slightly smaller than the valve stem. Buff the tube around the new hole and apply a valve patch. This may be vulcanized on, using C-25, or it may be put on with C-35 self-cure or acid cure cement. The valve stem can then be pressed back into the tube and worked around to the new location.

The old valve hole should be repaired as described for repairing punctures and cuts.

By passing a specified current of electricity through the electrical vulcanizing unit, a perfect union is formed between the new tread and carcass of the tire. The wires in the electrical vulcanizing unit are only heated to a point sufficient to effect a good cure and no burning of the rubber is possible with proper workmanship.

The curing heat is localized in the raw materials underneath the tread band; namely, the under-tread stock, breaker and cushion gum. As a result, the carcass and the tread of the tire are not subjected to a second cure.

The wires in the unit are left in the tire. Being laid on a 45-degree angle they have no effect on the resiliency or wearing quality of the tire. Nor is there any danger of the wires penetrating the tire and puncturing the tube.

In addition to retreading, the process will successfully handle the insertion of cord patches and the making of minor tread and sidewall repairs.



# Tommy Shows Them How to Sell the Big Pneumatics

He Tells Why Some Truck Dealers Can't See the Tire Business. A Little Sales Pep Needed to Sell Truck Tires, But It's Worth While

By C. P. SHATTUCK

**C**AL EMMETT, of the Yearrich Tire Company, was making his monthly call on the Progressive Motor Truck Company. Being a privileged character he breezed into the office of Henry Baker, buyer and head of the tire department.

"Lo, Hen. How's tricks? You ought to have a real man's size order for me this trip, what?"

Now the dove of peace took flight whenever these two met, and the present occasion was no exception. Henry glared at the Yearrich man and resumed his perusal of a letter.

"I said 'hello,'" remarked Emmett. "What's the matter? Swallowed your tongue? Or has the old man been jacking you up?"

The tire manager looked up from his paper and glared balefully. The Yearrich man grinned and started to josh his victim but the latter interrupted with the remark, "You've certainly got your nerve to come in here, let alone ask for an order. And can't you see that sign 'Private' on the door. Who ever gave you the privilege of walking in on me? Tires is it? I wish I could make you eat all I've got, you pirate. Tires? My heavens, I wish I never heard of one. I dream of them nights. Look at them," and the irate buyer threw a list at the Yearrich man who caught the paper as it hurtled towards the floor. "Look at that stock and then ask me if I have an order for you. Just look and then beat it while the going is good or I won't be responsible for what I do to you!"

Emmett glanced at the paper and dropped his grin. He let Baker rave until he was exhausted. "Always let them get the bile out of their system before you reason with them," was Emmett's rule. "They always are more docile," he said, "and if two lose their tempers things are likely to happen." Cal never lost his temper. He concentrated so long on the list thrown at him that Baker said, "Well, what have you got to say? You're to blame for this for you talked me into loading up this spring. I told you at the time that you were too optimistic. And now see the mess you've got me into. The boss is raising merry cain

with me. Just look at this billet doux," and he passed the Yearrich man a paper.

This is what Emmett read:

"My dear Mr. Baker: I have your monthly statement which shows \$3000 worth of tires in excess of the stock on hand a year ago at this time. I also note that your sales are 30 per cent below the average for a corresponding period last year. In view of the fact that the banks are not liberally inclined towards large stocks and that I notified you some time ago of the need of a reduction in stock I will be pleased to learn why yours is the only department that has not conformed with my orders."

(Signed) Del Hawkins.

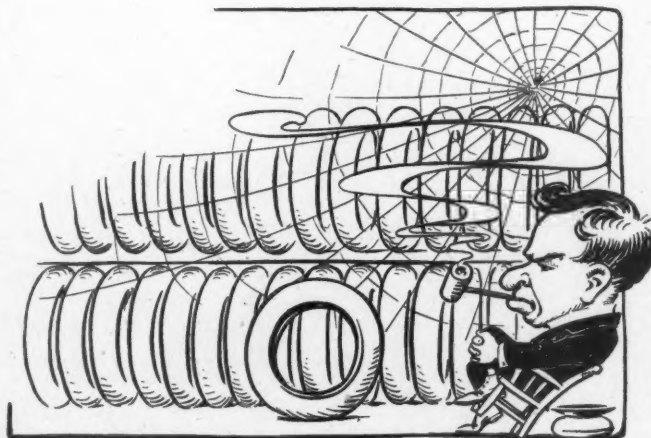
"Bad, very bad," remarked the Yearrich man. "What did you tell Del?"

"What can I tell him other than you hypnotized me into being overloaded?" was the retort.

## Cal Injects the Ginger

Now Cal Emmett was a diplomat. He believed the best place for sympathy was in the dictionary. Whenever he found a dealer long on tires and so discouraged as to sit down and wait for the trade to come in and get them at any price Cal didn't tell the dealer he was in hard luck, that business was bad and that others were in the same boat. Not Cal. His methods were somewhat radical.

"I guess I'll have to give this bird the ride over the rough spots," thought Cal. "He's made up his mind that he is stuck and has lost his kick. Wouldn't surprise me if he has got as far as starting to write his resignation. Yes, I've got to ride him. I'll try the old energizer and if that doesn't work we'll call in Del."



Some Truck Dealers Are Asleep to the Possibilities of Tire Sales

Cal continued to study tire list so long that Baker remarked, "Well, what's the answer? They are there, ain't they?"

"I see that you are long on the sizes for the 1-, 1½- and 2-ton sizes. On others you are about normal," and Emmett consulted his records. "Yes, I am correct. And I note that you haven't moved any of the truck sizes."

"As if I didn't know it. Did you come all the way to tell me that? I wouldn't have bothered with you but I thought you might have something under your hat but, I see you are the same old story, an order taker, but ye gods, you're through with me. You will never get an order from me, not if I see you first."

## They All Come Back.

The Yearrich man smiled to himself. How many times, thought he, had he heard that remark, yet they all came back for more. Mighty few shifted from the Yearrich. Once a Yearrich dealer always a Yearrich dealer. That was one of the slogans of the company.

"Well, I must be going," finally remarked Emmett. "I was sure that you would need a few 36 x 5's but I see I am mistaken."

"You bet you are! That's the way with you birds. Load one up and then pull the usual getaway. You tire men make me sick. Why, when it comes to giving a dealer anything you're it. You wouldn't give away the sleeves in your vest."

"Yep," said the Yearrich salesman, "I'm not going to waste any more of my firm's time with a dead one. When it comes to selling truck tires it takes a few brains and some pep, and when a dealer hasn't either, it is time to shift the Yearrich shingle to another. I'll just step in and

see Del. Tell him that you have run up the white flag and turn his tire department over to Jenkins. (Jenkins ran the equipment department and was a live wire, so much so that mention of Jenkins' name was like fluttering a red flag in front of an angry bull to Baker.) "Yes," continued Emmett, "Jenkins will be glad to get the space and Tommy Williams to get this territory for the Yearrich tires. Now Tommy just gave me a big order for tires. Has sold out his stock and it was as big as yours in proportion to the number of trucks sold. And—"

At this point the door opened and J. G. Wilkins walked in. He greeted Emmett cordially and noting that his tire executive was in anything but a pleasant frame of mind, suspicioned that he and Emmett had had a run in. Now J. G. was something of a mind reader, at least his employees credited him with such power. And J. G. knew that tires were moving slow with the dealers in his territory. And he had arrived at the conclusion that some ginger was needed in the tire department. So he remarked, "Now do not let me interfere with your talk, but I thought I heard someone mention Tommy's name. Haven't seen the boy for an age, Cal. How is he getting along?"

#### Takes Big Tire Order

"Fine," was the reply. "I was up there yesterday and came away with a nice order for pneumatics. I was telling Henry about it when you came in."

"You don't mean to say, Cal, that Tommy has sold those truck pneumatics and has ordered more? Why, man, all the dealers I know around here have tires to burn, and if the banks were more liberal I guess there would be some bonfires, alright. Tire situation has been bad, they say. I know it is with us. How about it elsewhere, Cal?"

"It is and it isn't," is the reply. Selling the big pneumatics is a new line for the old timers but the live wires are selling them. Now take Tommy for example. He bought a good stock of the sizes for his trucks and he has sold a bunch of them. And this is the way he has gone at it.

#### Trains Man for Tire Sales

"Now Tommy was sold on the idea of pneumatics from the start. Of course he is having his trucks come through with the big shoes since they began to become popular, but Tommy did not stop there. One of the first things he did was to hire a young bright chap in his town and send him to the Yearrich factory where the youngster learned the tire business from the raw material to the finished product. Then he took a course in repairing.

"Then Tommy let this young chap pick out the equipment he wanted. Bought vulcanizing equipment, compressor and all the fixins. Tommy gave over a section of the shop to the tire department and put in a real stock of stuff.

"His next step was to comb the field. Now there are a bunch of 3/4- to 1-ton trucks in Tommy's territory and territory adjacent. Tommy got a list of these and also made up a list of trucks he has sold with pneumatics. Opposite those he sold

he put the dates and left a space for mileage, also wrote in the size of tires and make. And the Yearrich leads, you can bet.

#### Circularizes the Owners

"The first thing Tommy did was to get out a real strong letter to all the truck users whose names he could scare up. He told them that he had a factory trained man to handle pneumatics and solids, that a stock of tires and tubes of all truck sizes was carried and that instantaneous service was to be had 24 hours the day.



All That's Needed is a Little Sales Pep

"He ran and is running a series of ads in the papers in addition to the letters and they are pulling."

"What is his line of selling talk in his ads?" asked Henry.

"Educational and a big play on dealing with the local man who can give you prompt service and a square deal in adjustments. Tommy features in his ads and letters the free service he gives and his factory expert. And this is what he gives. He will send his tire man out to change a tire on the road, to replace a tube, or to pump up a shoe that needs air. All owners are invited to come in and have their shoes inspected and inflated free of charge. After so many miles the tire is taken off and examined and replaced free of charge. The idea is that any break in the walls, cuts, etc., be taken care of promptly. The plan is to educate the owner to getting the maximum mileage out of his shoe."

"Doesn't help sales any, as I see it," remarked Henry.

#### Personal Contact Builds Business

"Wrong. It is a big builder of business. Keeps the owners coming to Tommy's place and gives his tire man a chance to sell tires, service—and tires. Now this is the wrinkle Tommy's man is cashing in on. He keeps a record of all tires sold and checks up their mileage as ac-

curately as possible. After a tire has been in service for some time—and there are lots of them—Tommy's man begins to educate the owner to the need of carrying a spare. Points out that if anything happens to a tire the truck will have to be laid up until the shoe is taken off and repairs made or a new tube put in. Lots of Tommy's customers are some distance back in the country. And that young man of his sells extras and the tire holder. One of the inducements is the giving free and mounting the holder and extra tire. And if the farmer pulls the old gag of 'Can't afford it now,' he is

given 30 or 60 days or his note taken. And their notes are good in the bank, you bet.

"And there are a couple of more wrinkles. One is that Tommy has gone after the smaller trucks equipped with solids and is selling their owners pneumatics. He stocks the rims and has a deal with a wheelwright to cut down the wheels. Tommy figures that allowing some tire dealer to cop out this business is wrong, that the profits are too big to let this business slide. Too many truck dealers send this business to a tire dealer and are satisfied with a small per cent of the profit. Why, I found lots of tire dealers are skimming the cream of the truck dealer's milk. Why a truck dealer lets this business

get away from him gets my goat. He can have the wheels changed as well as the tire dealer. They all send the wheels outside. And just figure the profits on a set of four tires. Tommy did and that is why he is cleaning up.

#### Road Service Wins Customers

"The other wrinkle? Why nothing special except that Tommy's tire man has a road cootie rigged to give road service to tires. It is quite an ingenious rig at that. You can change a tire in jig time and there's an air compressor run from a pulley on the front of the engine just like a belt on a tractor.

"Sounds good," remarked J. G., "but how does Tommy combat the mail order tire concerns? You know those country chaps love to buy by mail!"

"Educates 'em," was the reply. "Tommy's man knows them all. He shows them that to buy a tire at cut rates means that there is something wrong. Shows them that those big city places have big rents and other expense and that if a tire goes bad the truck will have to be held up until the tire is shipped back, examined and a replacement shipped back, if it ever is. And the youngster points out that if it is a bum tire the owner will get another one of the same make. And to clinch the argument he asks who is going to put on the tire and who is going to pay for the



work. Hammers home the native son stuff and the free service. One bird lured by a glittering circular from the city bought a tire and it went bad. He didn't get much satisfaction so he ran over to see Tommy's men. What do you suppose he got in the way of sympathy? Told the bird that it served him right. That owner is now buying his tires at home."

"Well," remarked Baker, there may be something in what you say but selling the farmer trade is different from in the city. Here we have competition. The tire dealers are some bright busy bees."

#### The Service Most Important

"If the tire dealers have any jump on the truck dealers it is your fault and I mean you, Henry," was the reply. "When you sell a man a truck you don't sell him a mess of mechanical jiggers but the work the truck will do. If you let him go elsewhere for any part of his truck you are losing your contact with him and it means a loss of future sales for the other fellow may sell him another truck. It is the same with tires. Why blank it all, tires are the truck and it is up to you to see that the tires give as good service as the engine, the transmission or the rear axle. Educate your new customer, and your old, that you will service his tires and sell him an extra to carry, especially on the long trip trucks. What is a few hundred dollars to a business man when an extra is good and cheap insurance against delays? The trouble is that you dealers are not making an effort to sell tires. You take orders if coaxed. That is not selling."

"Cal is right," said J. G. "We've got a few ideas from him and I guess you have, Mr. Baker. We will call a conference of the heads of the truck departments for tomorrow morning and formulate plans for a tire merchandising and service campaign. Oh, by the way, Cal, is Tommy doing anything with tires for passenger cars?"

#### Henry Perks Up

"You bet he is. Why shouldn't he? He has all the rigging to handle them and some truck owners have passenger cars, haven't they? I should say he is, at least this little order book of mine says so," and Cal flipped it open to the page and carelessly displayed it for Henry's benefit. That individual had perked up some since his greeting to Cal and when the latter left remarked, "Come in again, Cal, the latchstring is always out."

"Why, yes, Cal, drop in and see us and if you get up Tommy's way tell the boy I will be up and see him before long," said J. G. Tommy was his favorite and formerly the star salesman for the Progressive Motor Truck Company. Tommy had made good selling Pawtucket trucks in a new territory and J. G. was very proud of him.

"Well," thought Cal, as a jitney carried him down for the 6.02 train, "the old stuff worked after all with Henry. Glad I did not have to get J. G. after him, but Henry's like lots of them. Get

discouraged when things do not break right. What they need is pep and lots of it. Pep is what put the Yearrich on the map and pep keeps them going. Got to dig out the business these days, and I'll bet Henry does some little digging from now on. Sell tires, why of course he can sell them after he has sold himself," and the Yearrich man flung himself out of the jitney, looked at its tires, and finding them Yearrich tipped the driver a dollar with the remark, "You know good tires, son."

#### Good Roads and Light Trucks

There has been a vigorous attempt of late to place the blame for damage done to highways on "motor trucks," without any discrimination whatsoever, or without taking into consideration the vital question of road construction.

On the front page of a leading western daily there recently appeared an article which intimated that motor trucks were breaking up the highways.

In a current issue of "Highway Transportation" there appeared an article pointing out that the State of New Jersey, because of the condition of its roads, has taken steps to limit the size and weight of motor trucks to a point where they will not jeopardize great highways.

On the other hand trucks are not alone responsible for the poor condition of the roads. It is notorious that roads crumble and heave up even where heavy duty trucks are not used. It is said that many roads are being built today with absolutely no provision for the increased vehicular traffic they are called upon to sustain. Roads so inadequately constructed are torn to pieces by the traffic in comparatively short time.

Obviously most of the feeling has been against the heavier class of trucks, the majority of which are mounted on solid tires. It is this type that causes trouble even on well built roads and quickly crumbles poorly constructed highways.

It is reasonable to believe that the lighter type of vehicle, mounted on pneumatic tires, which, technically, help to preserve the highways, will be most in demand.—*Reo Truck News*, Reo Motor Car Co., Lansing, Mich.

#### Correction

In connection with the illustrations of cord pneumatic truck tires shown in the August issue of the Commercial Car Journal, we inadvertently illustrated the Horse-Shoe Tire over the name of the Racine Rubber Company, Racine, Wisconsin. This company manufactures the Racine Country Road and Racine Multi-Mile Cord Casings. The Horse-Shoe Tire is manufactured by the Racine Auto Tire Company. Both concerns are located in Racine.

The Kansas City Jitney Association will soon operate steam-driven motor buses of 40 to 50-passenger capacity. The vehicles will have two decks, the upper deck being also enclosed.

#### Chicago Advocates Lighter Road Loads

The city council of Chicago, Ill., will have presented to it by the chairman of a special traffic commission amendments to the city traffic ordinances, changing the gross weight of vehicle and load from 40,000 lbs., at present allowed, to 30,000 lbs., with a maximum weight of 1,000 lbs. per in. width of tire. A combination of truck and semi-trailer with load is recommended, with an allowed weight of 32,000 lbs., with a limit of 24,000 lbs. on any one axle. The city engineer favors trailers, with the load spread over six or eight wheels, instead of being imposed upon four wheels of a single vehicle.

#### New Vulcanizing Process

According to the Manchester, England, College of Technology, a new cold process of vulcanizing rubber in garages is possible by using two gases, sulphurated hydrogen and sulphur dioxide, which react upon each other, producing water and free sulphur. In the English laboratories crude rubber, either solid or in solution, was vulcanized, even when mixed with sawdust, leather scraps, or paper. The use of the new process, it is believed, will extend to the manufacture of artificial leather and linoleum, while the process, being cold, will allow extensive use of coloring matter.

#### Diamond T Organizes Export Department

The Diamond T Motor Car Company, of Chicago, Ill., announces the organization of an export sales department, with R. D. Spradling as manager. Mr. Spradling comes to Diamond T from the Hydraulic Pressed Steel Company. He has made a life-long study of export trade condition and is considered one of the best posted men in the country. The ever increasing number of Diamond T's in use throughout Europe and South America makes it necessary for the company to establish local representation and service stations.

The New York Electrical Exposition in October will see the products of two manufacturers who entered the electric vehicle field the past year. The new Steinmetz Electric Motor Car Corp., will exhibit an industrial truck and a commercial car.

The Ferris truck load law of New York State limits the combined weight of truck and load or trailer and load to 25,000 lb., "to be so distributed that there shall not be more than 800 lb. per in. in width of tire on any one wheel." Secretary of State Hugo says: "800 lb. per in. in width of tire will be taken as the limiting factor for the weight of the trailer." In other words, a semi-trailer combination with load may weigh more than 25,000 lb., so long as the truck or tractor alone, plus its rated carrying capacity, does not exceed 25,000 lb., and the weight on the trailer wheels is not more than 800 lb. per in. of tire width.

# What of the Morrow?

By LEE L. ROBINSON

**T**HE Interstate Commerce Commission, under authority given it by the recently enacted Transportation Act, is giving extensive study to the problems involved in the working out of the existing transportation chaos. Shippers of almost every commodity under the sun, and those business concerns the success of whose immediate future depends upon the ability of such shippers to get their products moved, are knocking frantically at the doors of the Commerce Commission and of the American Railroad Association, seeking relief.

The Commerce Commission some weeks ago, issued orders to railroads to rush cars to the west for the purpose of relieving congestion of foodstuffs which had been accumulating in warehouses and grain elevators until both were overflowing with crops of recent years. That this relief was of a temporary character, only, is indicated by the fact that crops of the present year have already accumulated at shipping centers in such quantities as to bring about a condition comparable to that existing when the relief order was entered by the Commission.

The transportation situation in which the country finds itself today, it is admitted, must be faced and worked out in the best way possible, with the aid of agencies of every character, Federal, State, city; commercial bodies, industrial and agricultural organizations, and individuals. But, granting that this crisis may be solved temporarily, in the light of situations now existing and those that have gone before, all suggesting that they may recur, the question might well be asked, what about the future?

## Consider the Future

That happening now, and that which has happened, is as water gone under the mill. Crying over spilt milk will avail nothing, but it seems well to inquire whether, in the light of history, the people of the United States are to sit supinely by and take no constructive steps looking to the guarding against future contingencies of this character. If the American people shall profit from experiences, disturbing though many of them may have been, these will not have been entirely without compensations.

Records of the Highways Transport Committee, of the Council of National Defense, which committee functioned throughout and immediately following the war, not only furnish concrete evidence of the number and character of transportation crises which may develop, but suggest methods for the remedying of many of them.

These methods suggest first the greater utilization of the highway and its twin agency, the motor truck, as potential mediums for emergency service, as well as for that day to day performance which has established them as agen-

cies upon which plans for the future may be built. The thing now needed therefore is to map out programs for their use in other times of stress. If roads are to be provided with the mileage, and of the durability, necessary construction materials must be moved, and promptly. Once the storehouses of materials are made available at needed points, and contractors are enabled to proceed with the works they already are obligated to undertake, the necessary start may be made, and hope for the future held out.

## Effective Highway System Imperative

A system of highways which will efficiently serve the nation, both from a military and an economic standpoint is badly needed. The cost of the same is not going to grow less for years to come. The country knows from dire experience just where the most critical transportation situations, from a standpoint of congestion, may arise, and it knows just about where the vast supply of agricultural products, on which this nation, and the world, in part, depends for sustenance, are apt to be found awaiting distribution.

The East, New England for example, the most congested section of the country, probably, from a transportation standpoint, it has been suggested, furnishes an ideal opportunity for development along highway transport lines. There the roads are good, the mileage adequate, the towns and cities close together, as compared with the west, and it should be possible to work out transportation schemes involving the use of trucks of great and immediate value.

Why, then, without further delay, are not some steps taken looking to a program which would tend at least to put this section of the country in a position to aid in handling the commodities around these centers. Similar activity as to others sections could then follow. The serious character of existing situations should act as a spur to plans looking to the future. The history of San Francisco and Galveston bears tribute to the fact that the people of the former, even while the city was yet in flames, and of the latter, while the waters still were rushing madly in a great flood through its streets, were thinking of the greater cities which would spring up on the morrow while grimly fighting the battles at hand.

## Extend Priority Orders

The economic needs of the country today require that road building materials be given, if not the benefit of priority orders, a classification apart from that of luxuries or other non-essentials. Once this is done, and road building is opened up, the way will be provided for the use of the same in the transportation of materials needed for other constructive works, such as housing, public works, etc., and the nation as a whole will

benefit. Fortunately, transportation aid to partially completed local roads, and for maintenance work, is now being furnished.

The names of the industrial centers spring almost unbidden to the tongue, and their usual needs from a transportation standpoint are known. It should be comparatively easy, if the great cereal and other crops of the west and northwest are to be moved, to chart the distributing centers for these.

The situation with respect to unusual demands on the great railroad terminals of the country in the different months of the year are familiar to the railroad executives.

For example, A. H. Smith, president of the New York Central Lines, said recently that the railroad situation of Manhattan Island is practically what it was 30 years ago, and that at least \$200,000 a day is wasted in distribution. What a commentary on the resourcefulness of the American people! We know that with the nation and the world clamoring for foodstuffs, there was recently pointed out a situation on the Burlington Railroad in Kansas where hundreds of thousands of bushels of last year's wheat were overflowing the elevators, and with no program at hand for moving it. We know that this situation in Kansas was being duplicated at point after point throughout the great middle west and northwest.

## Distribution Fails to Handle Production

It is conceded that distribution is vital to the life of the nation; that, hearkening to the call of the country, the farmers have produced to the limit of their capacity, and that an industrial production program has been steadily turning out millions of tons of goods. The justification for such production on farms and in factories is to be found only in the building up of a distribution program of such scope as will take care of these products, adequately.

One danger is that if the present emergency situation shall be, due to vigorous action on the part of Governmental and other agencies, finally taken care of, the people may be lulled into a sense of false security. Even though this congestion be relieved, sharp advances in rates for both freight and express shipments already have been authorized, and it is taken for granted these will have to be paid out of the consumers' pockets, with the express companies asking the Interstate Commerce Commission for rate increases ranging from 10 to 25 per cent., to meet increased wage awards, with the Railroad Labor Board award, calling for an increase of near a billion of dollars in wages to railroad operatives, effective, the hand writing on the wall should be very plain, indeed, and suggest a greater reliance upon highway transportation in the future than ever before.



# Factors Affecting American Truck Sales in Great Britain

American Manufacturers Are Cautioned Against Contracting on a Large Scale.  
British Market Saturated

By HENRY STURMEY

**A**MERICAN producers of motor trucks would do well to revise any opinions they may have formed concerning Great Britain as a potential market for their products as, during the past two months, a very striking change has come over the conditions existing here. Throughout the whole of the Winter and Spring, as throughout all last year, there was an unsatisfied demand for trucks of all kinds and almost anything on wheels that would run and carry loads was bought at almost any price asked. This situation resulted directly from three vital factors; first, by five years of non-production of trucks for private sale by the home-builders during the war; second, by limited importations, and third, by the great transportation needs of the industries so essential to the successful carrying on of the work of reconstruction. British factories, even those which had been building trucks all through the war for the Government, were largely unable to supply, as the models they had were war models and much time was needed to alter over to peace requirements. Moreover, owing to high cost of material, heavily increased wages and lower individual production per man, the prices of most trucks advanced to very high figures.

Here, then, was the opportunity of the American producer, particularly the manufacturer of the lower priced models, the cost of which, when boxing, freightage and exchange were added, could still be brought well below the figures asked for home-built trucks of similar capacity, and gradually, one by one, most of the 2000 to 4000 lb. trucks in the low-priced class were introduced here and a large number in the aggregate were imported. A few of the higher class models also found agents ready to handle them here, as even these could compete on even terms as regards price with most of the British makes and—the most important point—could be delivered.

## Large Contracts Apt to be Cancelled

Now, however, conditions have changed and a veritable truck slump has set in, in many parts of the country, affecting particularly American-made trucks. In light of this dropping demand it is expected that comparatively few trucks out of many of the large contracts which lately have been entered into for importation, will be shipped, and those American manufacturers who have large contracts under discussion for this market will do well to be cautious. The situation, as the writer has stated it, is not generally known to every one and there

are optimists here who still think there are fortunes to be made if they could only secure an American truck agency; so people are still trying to fix up agencies. Generally speaking, the less they know about the business, the larger the contracts they are prepared to enter into, in the confident hope that they can readily unload them on the truck agents throughout the country! Of these latter, however, very few are now entering into new commitments and certainly not for large quantities; in fact, many instances can be given of agents being unable to take up deliveries of trucks they had ordered when consignments have arrived. To cite one case, the writer but the other day was acquainted with the facts of one firm of "hot-air merchants" who had contracted heavily for an American light truck representation. This concern had been telling people here that it had sold over \$2,500,000 worth, but was unable to take deliveries. Ultimately representatives of the American producers had to come over and clear the goods already here to another firm at a substantial loss. Such will be the fiasco of other representative American makes if care and thorough investigation in the contracts is not taken at this time.

## Enterprise Checked by Credit Suspension

The reason for this sudden change is not entirely due to increased British production and excessive importations, but is directly attributable to Government action. All banks were ordered to suspend credits and call in overdrafts, which they have been doing everywhere, with the result that buyers of trucks have been checked in their expenditure and, consequently, enterprise. Indeed, the depression coincides pretty exactly with this order and another factor which is having a very damaging effect on trade is the imposed taxation of the new budget. Profits were, during the war, subject to an excess profits tax of 80 per cent. levied on all profits in excess of those made before the war. This tax was reduced last year to 40 per cent. and the commercial community were promised that it would be removed altogether at the end of the financial year. Naturally everybody went ahead on that assumption. Instead of this, however, 60 per cent. has been imposed, together with a new "Corporation Tax" of 5 per cent; this on the top of the regular income tax of 30 per cent., makes a total tax of approximately 74 per cent. on their profits, payable to the Government before making any return on their capital, which is quite an indigestible pill for the new companies and those having poor, or only ordinary, pre-war profits. This has badly

checked enterprise in all directions and motor transport has to suffer.

There is, however, some hope that matters may again improve in the near future, owing to the fact that the railways, which are now Government controlled, have just announced their intention to practically double—as compared with 1914—railway rates, both freight and passenger rates. As motor transport, before the rates goes into effect, is more than holding its own with the railways, despite advanced wages and high cost of gasoline, it is anticipated that, as soon as the new charges are definitely settled and come into operation, they will react in a new demand for motor vehicles.

## Left Drive Taboo, Also Partly to Blame

A further cause of trouble which is affecting the sale of several makes of American trucks is a strenuous campaign which has been carried on during the past two months by the *Daily Mail* and some other papers here against the use of left hand steered cars, which campaign has met with so much success that the Government has appointed a commission to investigate the whole matter. It is claimed that left hand control is dangerous, in a country where the rule of the road is the opposite to what it is in America. The "Safety First Committee of London," very active in this campaign, has sent in a memorial to the Government in support of the campaign, whilst the Society of Motor Manufacturers & Traders have done the same. The effort is being made to render use of left-hand-controlled cars illegal and to prohibit their importation. Consequence, people are afraid to buy left-hand-controlled cars and trucks until they know what action will be taken. No doubt this is largely an anti-American and particularly an anti-Ford stunt, but the peculiar thing is that, although it is, as above said, badly affecting the sale of other outfits, it doesn't seem to have affected the demand materially for Ford cars and trucks, the supply of which is still short of demand and which are still selling at a premium. It may be added that already one English firm has come out with a standardized set of parts with which a Ford can be altered over.

Reports from all over the country state: "Market overstocked with American trucks" and as few of the agents have much financial backing, if customers cancel orders already placed, or do not come forward, they are compelled, in their turn, to fail in their obligations to take delivery from the importers, who, in their turn, have been, in many cases, badly let down and unable to take delivery of trucks they cannot clear.

# Organize to Combat Unjust Legislation

Industry Must Act Harmoniously and as a Unit to Overcome Prejudice of Ill-Informed Legislators. What Authorities Have to Say Pro and Con Concerning Plans for Centralization of Effort

By C. S. PERRIE

IT has been repeatedly stated that were the automotive industry, all identified with it, from the proprietor of the tiny roadside, country garage to the manufacturer organized, it would wield an influence in legislative matters that would be second to none. In addition to the thousands actively engaged in the industry, obtaining their living, there are hundreds of thousands of owners who could be educated to cast their ballots in favor of safe and sane automotive legislation, and against those candidates holding that drastic measures are necessary.

## Annual Crop Increasing

The annual crop of bills antagonistic to the interests of the industry and owner is increasing yearly. The past legislative year saw more and more restrictions placed upon motor highway transportation. Numerous bills were ridiculous, and, if allowed to become a law, would have driven certain capacity trucks off the public highways. Fortunately, these bills were so drastic in their scope that they were defeated or sanely modified.

During the past few months much has been heard about the relation of motor trucks to the highways. In some instances the daily press has published statements to the effect, indirectly if not directly, that the heavy trucks were crumbling up the roads. As an example, one of the newspapers of the city of Cleveland printed a front page story on the trucks versus the roads. This article contained alleged statements of highway officials, all tending to throw the blame on the motor truck. The backfire set by the truck dealers' association of that city was helpful to counteract the attack, but there can be no doubt that many voters, not automobilists, were influenced by the article crediting the trucks with the destruction of the highways.

Readers of "THE COMMERCIAL CAR JOURNAL" will recall numerous instances of proposed bills, although some were modified, which when they became a law, affected the industry in a most hurtful manner. And yet one who keeps in close contact with legislative matters throughout the country predicts that the coming sessions of the legislatures will see far more drastic acts or bills submitted than have heretofore appeared.

This authority, in talking with the writer, said that not only the State authorities but the public as well, credits the poor condition of the public highways to the increasing use of motor trucks. This view also is held by a large number of owners of passenger cars who

grumble over the poor condition of the highways. Said the man who predicts drastic legislation: "I have met dozens of owners who swear at the condition of the highways and cuss the motor truck as being responsible. These motorists do not stop to consider that for several years there has been little new construction or repairs made. They do not realize that although there have been vast sums appropriated for new roads and repairs, owing to labor and transportation, only a small per cent of the planned work has been completed. In one large city I noted a sign at an employment bureau stating that \$5.50 a day would be paid for workers on the highways, that there were no commissions charged, and transportation was free. Few responded. Labor can make more money and more easily in other lines of activity."

## Public Opinion is Vital

"The point I am trying to establish is that the idea that trucks have broken up the roads has found root in the minds of the public and is certain to have influence upon the legislators. It is only natural that a legislator, hearing passenger car owners talking about the poor roads, and linking the truck up with them, will be responsive to bills curbing the activities of the truck. This coupled with the popular game of soaking the truck when more money is needed is bound to be injurious to the motor truck industry unless those connected with it, the manufacturer, dealer and owner, wake up to the fact that spasmodic efforts to defeat adverse bills will not be effective in the coming legislatures.

"Much excellent work has been accomplished by such organizations as the Motor Truck Club of America, the Massachusetts Truck Association, and a few others, but, unfortunately, these are but a drop in the bucket. There has been too much of 'letting George do it' in the industry, of passing the buck to the owners of trucks. And it is doubtful if the best results are obtained by relying upon an unorganized number of truck owners to appear at the hearings on the bills. Invariably the committee in charge of the hearing are not favorably impressed by the remonstrances because of the fact that each owner has a different viewpoint.

## Stalled Because of Technical Ignorance

"I attended a hearing in a large city about a year ago at which the owners of trucks appeared, voluntarily, to discuss a bill which proposed to legislate trucks of over 3 tons capacity off the State highways. There was also another bill which

would give the various towns a part of the revenues collected from the license fees. It was some hearing. The owners of the heavier trucks objected to the first bill on the grounds that it would put them out of business, but the man in charge of the bills tied those owners up in knots when he asked them questions of weights, load per inch per tire, effect of loads on roads, and a mess of similar questions with which the average truck owner is not familiar.

"Now it happened that the executive secretary and the legal counsel of a big truck organization, one that has been very successful in steering bad truck legislation on to a side switch, were in town, and they attended the tail end of the hearing. They, through a dealer, secured a postponement of the hearing, and, before it was again called, went into executive session with the local officials of the dealers' association, which was largely a passenger car organization. The result was that the counsel of the association was supplied with facts and figures so that when the official, who was attempting to put over the bill, tried his figure stuff again, those who appeared against it were armed with such effective data that a deadlock was secured in the committee.

## Politics Proves to be a Valuable Weapon

"But in spite of the excellent last minute defense, it looked as if all of the teeth would not be drawn from the bill. It was then that politics were played against politics, which brings up the point of this story. It developed that the official in charge of the bill was up for re-election. To make a long story short, it seems that the dealers became active and secured control of the votes necessary to either re-elect or defeat the official. The official was re-elected by a narrow margin and the bill was defeated, so you can draw your own conclusions.

"The point is that the entire automotive industry could accomplish as much as did the dealers of that town if its members would organize and use their organization politically. This is not suggesting a national organization, but rather a State, for the situations that will develop must be handled locally."

The writer pointed out that the dealers were organized.

"But not effectively," was the reply. "You have a mass of associations. There is one for the tire men, another for the accessory branch, a battery association, passenger car, truck, garage, service managers, manufacturers, jobbers and others. Each are working for their own ends without their eye on the ball, which is



the industry as a whole. Whenever a bill is introduced, say, discriminating against the garages, for example, the garage men appear and fight. Whenever there is a bill unfavorable to the users of passenger cars, the dealers selling these and some owners appear. And when trucks are legislated against, a wee handful of truck dealers or owners try to stem the tide.

"And whenever two dissimilar trades appear they do not agree, hold different viewpoints, all based on their own interests, not the interests of the industry. Why, only recently in a big State there appeared a dealers' association and another. It was some warm set-to, according to the newspapers. Open war was declared between the two associations. What was the result? Why, the committee just played both ends against the middle, to use a sporting phrase.

#### Abolish This Fatal Controversy

"In another case that came to my personal attention there was a bill affecting both the passenger cars and the trucks. Both branches were represented. Did the committees of each get together before the hearing and agree to a plan of defense? They did not. They went into the hearing with as much love for each other as a pair of strange bulldogs locked up in a garret. What was the result? Both lost out and both branches were affected as a result.

"Take the recent case in Cleveland, which was printed in your paper. Here we had an attack on the heavy trucks which was alleged to have been instigated by an owners' organization in which were many passenger car and truck dealers. The truck dealers' association came back, but the mischief had been done, at least enough to hurt, and it will hurt. If you do not think so watch the coming session of the legislature out that way.

"The crux of the situation is that the industry has too many associations all working toward different ends. What is needed is an amalgamation of these interests. Weld them into a perfect working machine, and when a bill antagonistic to any branch of the industry is brought up let the committee representing all branches go before the legislature and say: 'Gentlemen, we represent all branches of the automobile industry in the State. We have so many thousands invested. We have so many members. We are backed by thousands of truck and passenger car owners, and we have other influences we can bring to bear at the ballot box. Our cards are on the table. Let's talk turkey.' And I guess there would be some 'trading,' as they say in politics. And not only could your industry put it over, but it would be able to have a say in the matter of building roads, of spending the money for real highways, not the makeshifts which have been one of the factors in this talk of road destruction by trucks."

#### Encourage Complete Unionization

In New York the writer called on a man who is entirely familiar with the industry, a man who travels extensively,

and has his ear to the ground. I asked him what he thought was being accomplished by the various associations and organizations.

"They are accomplishing a great deal," was the reply, "but there is a lack of co-ordination, particularly between the passenger and truck dealers. The latter insist on a separate organization and of conducting their affairs without co-operating with the passenger car dealers. This is, in my opinion, wrong. The passenger car dealers greatly outnumber the truck dealers, and, in addition, the former have the backing of hundreds of thousands of owners of passenger cars. What the truck dealers should do is to link up with the passenger car dealers in one big association. Then the association could go before the legislature and bring pressure to bear."

"But," said I, "are not the interests of the truck and passenger car dealers separate, run along different lines? Would not the passenger car association because of its greater number of members be able to outvote the truck members, and would not the passenger car dealers naturally look to their own interests?"

"No, I think not," was the reply. "As a matter of fact statistics show that approximately 65 per cent. of the truck dealers in this country are also passenger car dealers, so I think that answers your question. As a suggestion, why not allow the truck dealers to retain their titles and become a branch of the passenger car dealers' organization? It should be possible to have equal representation on the board of directors and to thrash out all problems to the satisfaction of both lines. In my opinion much of the difference of opinion between the two lines would be straightened out if they combined, and greater results would be obtained for all concerned. The ideal organization would be, to my way of reasoning, one parent body, and all of the branches, such as tire, battery, equipment, service, repair shops, garages, truck and passenger car dealers, as divisions. Each could retain its own identity and transact routine business, but whenever a bill came up threatening any, all could throw their weight in the scales.

The plan could be further carried out by forming a State body or organization composed of the various city or town associations. Each could appoint delegates to a State convention, and as each association would bear its proportionate share of the expense of fighting State legislation the cost per association would be very small. Such an association could well afford to engage a capable man to act as a watch dog at the legislature and to hire the services of competent legal counsel."

#### Some Associations Lack Incentive

"There is another reason why such a program would be beneficial. It would save the new and young organizations from going on the rocks. Have you ever noted that the trade papers publish items about such and such an automobile association that has been formed in some city? And after a brief period do you ever hear anything more of that associa-

tion. It may surprise you to note that 60 per cent of the associations formed die. And this is not confined to the smaller cities alone, but has occurred in some of the larger ones as well. I could name a dozen or more dealer associations that have passed out, been resurrected, and again pass away. Now these associations would have been alive today had there been an incentive for the members. Being small organizations and without big, directing minds to keep the members together, petty jealousies crept in, interest waned, and then the end.

"With the combining of all branches there would be a club house where the members could meet and get acquainted, and where officials who are adept in ironing out the differences could convene. In other words, there would be men who could untangle the knots and keep the lines straight. And in every successful organization there has got to be a head or heads who are broad-minded, liberal-thinking men who can devote their time to keeping the organization intact. These officers or executives could help the new associations organize and steer the boat clear of the rocks until the craft reached smooth water. I know exceptions will be taken to my statements, but think them over."

#### Insurmountable Petty Jealousies

Mr. Blank's remarks led the writer to conduct a little investigation on the demise of several associations. In one city he found that the dealer association had been dead several years and that any effort to revive it met with a weak response. In this city one of the old-time dealers in talking of the reason for the failure to get the dealers together said: "There is too much petty jealousy among the boys. Everyone wants to be the president and won't play unless he is assured of the office. And every officer we have had was not supported for this reason. The boys can't realize that it takes a hustler to fill the bill and that he must be given support. You could start an association here if you made 90 per cent of the boys president, and 90 out of the bunch would assume the title but not the work. I doubt if a new association could be formed, and the Lord knows we need one badly. We get slammed with bills at the State house and only a few appear against them. I am afraid we are a hopeless bunch. Yes, an association is needed, for price cutting and gypping is beginning to assume portentous dimensions around here. It is a game of cut throat all around."

In another city there was crepe on the door of the association. The writer called on a dealer, the oldest in the town, and asked him what had become of the association.

"Blew up," was the reply. "The trouble? Oh, we did pretty well when — was president, but after three years he thought it was time someone else assumed the burden. There was a contest and the chap that won out took the title but did not assume the job. With no active worker we died, that's all."

(Continued on page 114)

# Motor Truck Manufacturing Problems

By WM. H. NOLAN, Sales Manager Available Truck Company, Chicago

**M**OTOR truck manufacturers for the past three years have been confronted with many problems that heretofore were unknown in the industry—yet, by force of initiative, born of the war, they have faced and conquered nearly all obstacles that have retarded progress and future developments.

There are three cardinal departments in the manufacture of motor trucks, namely, production, selling and financing. Of these three the last mentioned is the parent, in that it is responsible for the birth, the growth and the guidance of the other two.

Production depends for its expansion on the mechanical efficiency of the time-trained laborer.

Selling, too, is largely stabilized by methods of tried and proven experiences. Financing, however, is a matter of constant study and application.

Any plan of financing, no matter how carefully planned and laid can be gathered that will act as a on the slightest change in economic conditions.

Production can be increased or decreased as the law of supply and demand requires. Selling can be fostered or curtailed to meet conditions—but financing must be elastic, as the basis on which it rests is more tender, and influenced by a wider scope of economic laws. Therefore, the finger of the manufacturer must be always on its pulse.

To those who would be properly guided, a close, studious and analytical reading of the financial section of the daily newspaper much can be gathered that will act as a guidance for the future, as in the past predictions have been offered weeks, months, yes years in advance of any happening or event. A clear knowledge of geography, history and natural customs and industry is very essential, and should be mastered by those who have to do with transportation.

To quote from the article appearing in the New York Tribune Sunday, January 5, 1919, on transition, labor and profits, by H. J. Davenport, Professor of Economics in Cornell University; he very aptly pointed out that no one can foretell, with anything like confidence, what is to be the long-time trend of prices; that, mainly the **decision will be with national financial problems and policies**; that the wise policy would be to protect further fluctuations; that falling prices are even worse in their total result than rising prices, but that after all the first and temporary movement is likely to be—not merely of readjusted prices, but of slightly falling general prices. There would be no great harm at the present time if there

was a fall in present prices of motor trucks, provided, the fall went neither fast nor far. Employers probably can maintain the present level of wages, even though prices for the present are somewhat lower, as the margin of profit is still ample. In this transition period wages and profits are not likely to change their relative position, but only a sweeping readjustment in the relative prices of the units that go to make up a complete motor truck, will there be adjustment—and it is generally conceded that the unit manufacturer can absorb the major portion of these possible reductions.

## Manufacturing

Nowhere in the world of business, at the present moment, are conditions and



Wm. H. Nolan  
Sales Manager Available Truck Co., Chicago

methods changing more rapidly than the workshop and factory itself. The application of new methods, new ideas and new inventions of tools, jigs and new combination of steel, are some of the things that in themselves are revolutionizing practices as well as the character and skill of the employees, all of which results in a tendency towards increased production.

Factories today are being run more by the authority of concrete figures and facts than by the old rule of thumb and conventional methods of authority and experience only. The younger men forcing the older ones, through modernized methods, to give way.

## Selling

In all respects the sales force is the life-blood of business, and in many cases, the success or failure of the business rests on it.

Regardless of the quality or quantity of merit possessed by the product manufactured or sold, without proper introduction and representation, its success can only be uncertain or limited. An efficient sales force cannot be created in a day or at a moment's notice, neither can it be purchased outright for a money consideration.

It arrives at the state of perfection only by a careful selection of material to be used, and then there must be, on the part of each employee, salesman and sales manager, implicit confidence in the goods sold and loyalty to the interests mutually represented at all times under all conditions.

The selling end of an organization may be compared to the power of a fast and intricate machine, effecting the dividends according to its strength or its weakness, as each employee of that department is a cog in the main drive wheel, and one of which, if weakened or impaired, affects the entire machine.

## Financing and Credit

The past ten years has shown many radical changes in the credit systems previously employed, and the next ten years will witness far greater changes in this branch of our industrial life. Each year, month, day, yes, each hour calls for more modern methods of dispensing credit, and along and on a more scientific basis.

At first glance this statement might seem to indicate that credits are and will be curtailed, but that is not a true inference, as credit is dispensed today as liberally as ever, but it is and will be more intelligently dispensed than heretofore.

By cutting off the unworthy from credit, this position offers and extends to the worthy, more than ever before, a broader avenue of more extensive production. Curtailment applies to such who are not entitled to such by virtue of the unscrupulous practices employed to cheat and defeat those who are their real friends.

## Financing

The Great War has indeed worked wonders in revolutionizing previous methods and customs adhered to by people of this country for a long period of time, and has forced developments here and there which otherwise would have been years in getting a national hearing. This is no less true of the **Trade Acceptance and General Credit Purchase Plan**, which as a



result of the war, has had its reintroduction into the system of American credit and finance.

The trade acceptance, and many other forms of credit, have made rapid progress during the past six years, in fact, at the present time there are only five states in all that do not recognize the Negotiable Instrument Law, and an acceptance, therefore, in these states does not take the form of the check. However, it would not be surprising if within the coming year the trade acceptance would be generally used throughout the United States.

The trouble with the trade acceptance system of the past was that few people knew of its elasticity and benefits to be derived from it, and by the trade acceptance system is meant the substitution of time drafts drawn by the seller on the buyer of merchandise at the time of the sale, for the present system of straight sight draft or open book accounts.

The trade acceptance is a negotiable certificate of indebtedness, arising out of a current transaction in merchandise, having a certain maturity drawn by the seller on the buyer for a fixed or determinable sum of money, representing the purchase price of goods. The trade acceptance is payable to order, and bears across its face the unqualified and unconditional acceptance of the buyer.

In the course of the development of the acceptance in this country, as in the development of other worthy purposes, difficult tasks invariably arise, not because of the question of merits involved, but for the reason that a complete understanding of the method to be introduced and extended is lacking. The acceptance idea coming from a national demand which arose from war conditions, for the establishment of a sounder credit system, has today the approval of the Federal Reserve Board, the leading financial and governmental bodies of the United States. It is pleasing also to find that on the whole only a comparatively slight opposition has been encountered in the development of the trade acceptance method.

Different minds develop different points of view. The acceptance method, where it is desired to be introduced, must clearly have its advantages shown and its merits made to be appreciated. The progress of the acceptance has been very rapid—for from also zero at the start, the acceptance today has risen to more than national prominence and importance.

However, it is not in the least strange that the entire business of the country has not yet adopted the trade acceptance method, and experience has shown, as well as economic histories of nations, that radical changes in the business methods of a country, even though of the very best, come rather slowly and require serious and continued effort.

The banker has all to gain and nothing to lose by the trade acceptance method. The acceptance has proven itself to be of the best commercial paper in the field; it is the safest of all other forms of commercial paper; it may be utilized for the investment of idle funds; it is in itself an ideal liquid asset; it creates a keener sense of business obligation, a prompter payment of debts, better business in general

and as a consequence, better banking conditions.

To the seller of merchandise, I would say that the trade acceptance is yet the best plan of assistance that has ever been devised for him, and a protector of his interest to the fullest extent. It carries with it a definite promise to pay, an acknowledgment of the correctness of deliveries and of the obligation itself; a shorter term of credit; liquidity of assets; better facilities for collection; closer touch with the manufacturer and dealer's bank; and practical relief from expense and burdensome practices, which have grown up under the open account method.

#### Trade Acceptance Benefits Buyer

For the buyer, the trade acceptance is of a particular and distinct benefit. It puts him in the classification of a preferred customer—one who serves notice on the business world of his disposition and ability to meet his obligations promptly on maturity. It gives him greater independence of action, provides an effective check on over-buying and over-borrowing; it eliminates the evil of laxity in credit extensions and tends to establish his standing at the banks and business community. The buyer should not be fearful of any inroad upon his privileges, as the trade acceptance does not take away from him his cash discount or his privilege to use single name paper, for they both operate smoothly and without conflict in the same field.

There still are today a great number of American business men who are uninformed concerning the details of the trade acceptance method, and, therefore, unconvinced as to its merit. Some, at least, have given the acceptance the so-called introduction. In the majority of cases where this was done the acceptance has come to stay. Nevertheless, others of the ultra conservative type, while conceding its merits, are not disposed to disturb existing conditions, which in the past have proven themselves satisfactorily for their purpose. There is still another class of American business men, whose attitude may be described as unduly cautious—they want all others to settle down in the use of trade acceptance before they themselves will adopt the plan.

Nevertheless, the principle is altogether encouraging, for in nearly every line of business is the acceptance used today. The Government has rendered the greatest assistance through the mechanism of the Federal Reserve System to the progress of the acceptance methods. This alone has influenced many to adopt the plan through the establishment of wider banking facilities. The Government has given every advantage to the standardization of commercial paper and has thereby rendered an invaluable service and aid.

But other sources which are fully capable of rendering an equally valuable assistance to American business have been the banks, and here the question has been "what are they doing?" Evidently the only possible answer to this question is, that if they possess a sufficient business intelligence to be able to appreciate the merit of a superior article when it is presented to them for sale or discount, or

the general adoption of sounder credit methods, they, too, must have a greater interest in the plan. They must be progressive—alert to encourage every moment intending to bring about the soundest and most scientific credit system. If the banker has been accused of retarding the development of acceptance, this situation, however, is fast becoming remedied and a greater interest is being shown daily by increasing the number of banks throughout the country for more information on the acceptance and its principals. Even those banks which have developed an unfavorable attitude in the past towards the acceptance method, are today fast coming to realize its practical utility. Already there has been established the basis for an American open discount market, and the users of acceptances are becoming more numerous every day, and with the proper publicity to this better form of credit by the banker, his help and co-operation towards extending its use, with the encouragement which he is able to give the business community, the progress of the acceptance will be more rapid indeed.

On the other hand, the banks are not becoming hysterical, but are simply putting the brakes on a lot of enterprises, which, if permitted to continue, would aggravate, rather than alleviate difficulties. The plan of the bankers to liquidate not less than ten per cent of the bank loans of the country within the next four months, is also a step in the right direction, and will tend to bring business back toward a more normal basis.

Truck dealers need not fear being refused legitimate amounts of credit from the banks, provided they can show a clear slate. Trucks and other agricultural implements are not non essentials, in fact, the banks realize only too well these products are the most essential things this country needs at the present time.

There has been by far too great an amount of publicity or ill-advised propaganda spread throughout the United States as a whole, containing much information that has to do with alleged discrimination against commercial motor paper. As a matter of fact, close analysis proves conclusively that credit has been considerably curtailed, at a great inconvenience and uneasiness to thousands of those concerned—all because somebody, somewhere, somehow, poured forth a blast of untruths, to the effect that the Federal Reserve had placed an official ban on automobile deals involving credit. And, quite humanly, like a lot of ducks, given the following the foot-steps of others, it soon gained publicity that was not warranted.

The view-points of the presidents of our great transportation systems, as well as the presidents of our great financial institutions, concur one and all that there can be no question in the mind of anyone, considering the important part that the motor truck has now come to play in the matter of transportation in this country, nor that it has come to stay and to supplement railroad service, just as the automobile and the trolley car, and the bicycle have supplemented and extended the radius of suburban life.

# New Power-Rite Constant Mesh Transmission Departs From Conventional Speed Change Method

A TRANSMISSION that differs from conventional practice in that it combines a sliding key and over-running clutch is being manufactured by the Detroit Transmission Co., Detroit. It is of the constant mesh type but differs from the conventional in that the changes of speed are accomplished by sliding keys. These keys engage or pick up internal teeth in the gears.

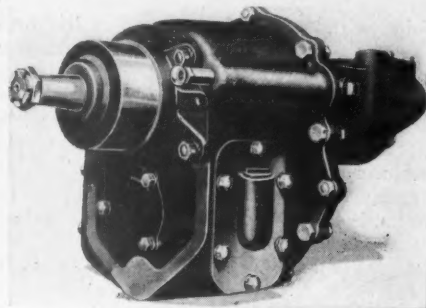
One of the interesting features of the transmission is the method of control. Instead of the changes being effected by the usual lever or stick, they are made by a lever on the steering post similar to the spark or throttle lever. The lever is carried in a quadrant on top of the wheel and actuates a rod through the center of the post. The control quadrant is so arranged that when the lever is moved to the extreme forward position the reverse speed is obtained. Bringing the lever toward the driver obtains neutral, low, second, third and high in the order named.

Movement of the control lever is transmitted through linkage to a yoke that grips a channelled ring attached to the sliding or shift key. There are three of these keys which operate in longitudinal grooves in the main or driveshaft. Selection of the speed is, therefore, obtained by moving these keys into engagement with the internal teeth of the gear or speed desired. There is one shifting rod.

The gears on the main shaft are mounted on substantial bronze bearings and the gears rotate independently of the shaft except when the sliding keys engage with a gear. Drive is only transmitted when the keys engage with the internal teeth of a gear. In the four-speed transmission shown in detail there is a form of over-running clutch employed with the second and third speeds gears on the countershaft. This construction permits of the gears rotating in but one direction only.

The advantage claimed of the design is

that when the truck is running down a grade or its speed is greater than that of the engine, the over-running clutch comes into operation when the second or third speed gears are engaged. Thus the sec-



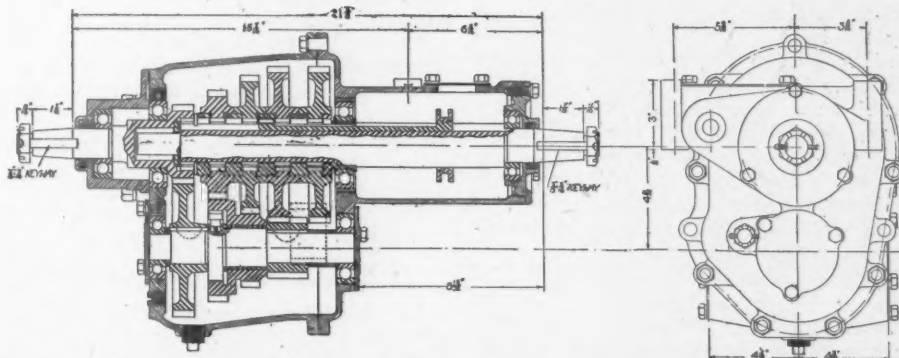
View of the Power-Rite Model B Transmission

ond speed gear could be engaged and the truck allowed to run freely down a hill without stresses being imposed on the gears engaged. In a series of grades when use of the second is required it is not essential to release the clutch as the over-running clutch functions.

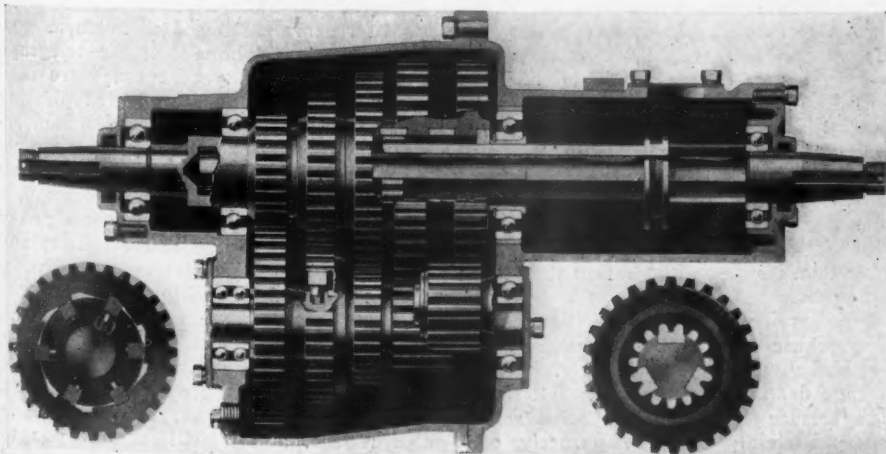
Another advantage claimed of the design is that there is no clashing when changing down with the truck operating at either a high or a low speed, as it is not necessary to equalize the speed of the gears on the main and countershaft as in conventional practice. One of the demonstrations made with the Power-Rite transmission is the changing from the direct or high speed to the reverse with the truck in motion and without any clashing.

One of the features of the design is the ease with which the unit can be disassembled and reassembled. The case is in two sections or halves, bolted together, and both the main and countershaft can be assembled separately with all bearings in place. Statement is made that the amidship type can be removed, entirely disassembled, reassembled and replaced in less than two hours. The case construction and design makes it an easy and simple matter to replace any of its components as well as servicing the unit.

The plans of the company provide for the production of three models, A, B and C. A is for trucks of from 3/4 to 1 1/2 tons



Mechanical Cross Section and End View of the New Power-Rite Gear-Set



The Power-Rite Constant Mesh Transmission, Control of Which is by Lever on Top of Steering Wheel

A cross-sectional view of over-running clutch is shown at left and cross section of main drive shaft with sliding key at right

capacity; B, from 2 to 3 tons; C, from 3 1/2 to 7 tons. Models A and B will be produced in both the unit and amidship types. Model C will be the amidship or main frame design only. The gear ratios of the model A are: First, 4:1; second, 3.3:1; third, 1.8:1; fourth, 1:1; reverse, 4:1. Model B: First, 4.9:1; second, 3.24:1; third, 1.8:1; fourth, 1:1; reverse, 4.9:1. Provision is made for a power take-off.

The maximum engine torque of the model A is 1900 lbs.; that of model B, 2300 lbs. With the exception that the length is slightly longer than the conventional design, due to the design of the control housing, the Power-Rite transmission conforms of S. A. E. standards. Throughout the best of materials and workmanship is noticeable.

The plant is located at 166 Lycaste Avenue and is equipping to produce 100 transmissions a day. The bulk of the production will be models A and B.



# What the Dealers Should Do in Order to Improve Themselves Before the Bankers of the Country

By JAMES J. A. FORTIER\*

**I**T is my desire to speak to you immediately and frankly. Your problems and those of the factory are necessarily those of your bankers. It is the clear duty of the automobile financiers, so-called, to point out to their clients the mistakes that they are making in order to solidify the structure upon which the security given them is built.

The safety, the success, and the stability of the automotive industry depends upon a proper understanding of the problems arising from:

1. The discriminatory attitude of the bankers with reference to automobile credit restriction.
2. The lack of science displayed in handling the problems of road construction.
3. The decline of gasoline reserves.
4. The point of saturation and factory management.
5. The lack of general business methods and knowledge displayed by automobile dealers.

## Dealer Carelessness

The discriminatory attitude of the bankers with reference to automobile credit restriction has been partially caused by the lack of general business methods and knowledge displayed by automobile dealers. The first and the fifth of the problems to be solved are, in my opinion, very closely related. The automobile dealers of the country are responsible in no small degree for the boldness, even rashness, at times of many leading bankers when speaking with reference to automobile credit restriction.

When it seemed necessary in the wisdom of the Federal Reserve Board to "deflate" the credit volume of the country, there was no class of business men more vulnerable than the automobile dealers, for as a class they were obtaining credit more easily and more out of proportion to their net worth than any class of business men in America. The magic growth of the industry had brought into its folds alike the skilled and the unskilled men from all walks of life and from every field of endeavor in a headlong activity to satisfy the desire of America for rapid transportation, and there was little time for conservatism, method, and system. It was in the midst of an era of unparalleled extravagance and waste that the Federal Reserve Board exploded its bomb. And, to the average automobile dealer, the shock was very strong.

He had kept little or no balance with his bank. He had no clear conception of his earnings. He was unable to make up

a positive statement of his affairs, only a relatively correct one. He was not sure of his net worth and did not know what percentage of his gross earnings constituted his net profits. He was hit amidst ships without warning when his life preservers and life boats were dangerously impaired. Fortunately, he was not too far asea, and he is slowly putting to port and to safety by understanding that the basis of credit is confidence and that no banker has a right to deal with him unless he shows a knowledge of such business methods and customs as prevail in other successful lines of commerce.

Finance companies have been organized everywhere to buy automobile paper, some national in scope, others local in their territory. Their experiences, while satisfactory, have been very interesting. They have supplied the missing link between the bank and the dealer, the link that connects credit and the cash drawer—namely, the instrumentality to collect the notes given by the purchaser on the deferred payment plan.

The automobile finance company acts as collector and broker for the dealer. Of course, it charges more than the banker, it must necessarily do so, for it does more than the banker. The banking fraternity has welcomed it, it is an accessory of the banking system, and a distinct and important factor in the proper distribution of automobile credits. Its careful credit department, its experience and the application which it gives to the study of credits and collections are a great aid to the banker and to the dealer.

## Ignorance of Banking Affairs

The finance company is itself a borrower of money. It has two outlets for the notes, the bank and the commercial paper market. The average dealer has never been much concerned as to the sources whence came the wherewithal to sell his car on time. He has generally felt that the service charges of the specialist automobile finance company are too high, or that the profit derived from that specialty is very large. This is where the general lack of business knowledge of the automobile dealer usually displays itself most fully. He does not understand that the finance company must pay for the money which it lends and, therefore, must charge more than its cost of operation to make a fair profit.

This service charge is a legitimate cost of purchase and the prospective owner should be told so very clearly, but the average dealer has erroneously felt that a high service charge caused sales resistance. Certainly so, if improperly presented, so is the price of the machine a cause of sales resistance. If the automobile dealers of each community would meet through their trade associations at

once to discuss time sales and nothing else and arrive at the conclusion that all of them would pass on to the purchaser these service charges, would not sales resistance caused by the high service charges be completely eliminated?

The dealer must stop what are called "long trade-ins." He must value correctly second-hand cars if he expects bankers to value them rightly. A loan on a new car is safe only in proportion to the resale value of the car financed. He must realize that a connection with a sound finance company is necessary and valuable to him and that very surely automobile credits will be more and more diverted from the banks to the finance companies, for the banks prefer to deal in such paper when converted by the finance company into commercial paper. Just as the purchase of houses is done almost entirely through the building and loan association, so the purchase of automobiles on the installment plan will be handled almost exclusively in the not far future by companies who are equipped for this service.

## Do Not Abuse Credit Facilities

May the dealers employ competent bookkeepers, and cashiers and office assistants who can fill in forms correctly and make intelligent business reports! May the dealers take to heart the necessity for a scrupulous regard for the rules of high integrity and strict business probity! The dealers who have given mortgages on their cars and who have sold them without remitting for them have done the business a great damage.

Men or women who are to use their cars for other than useful pursuits should be denied credit facilities, although it is admittedly difficult to draw a clear line of demarcation as to when the car is a useful vehicle, for at one moment it may be and at the other it may not. Nevertheless, great caution should be used to leave the credit reservoirs unused as much as possible. The telephone and the telegraph are indispensable, yet at times are used for pleasure, so the once styled pleasure car, while at times may be used for pleasure and more properly for recreation, yet it is fundamentally a passenger vehicle and, like the telephone and telegraph, a carrier. The automobile is to the highway what the locomotive is to the railway and the steamboat to the waterway, and without these self-propelling vehicles the trinity of transportation is incomplete and the business of the country retarded.

The factories have kept too much aloof from the time sales problems in the past. However, there is a great improvement in this regard, and it will interest you to know that a great factory has approached us with a view to guaranteeing the time sales of their dealers and distributors.

(Continued on page 96)

\*Mr. Fortier, President of the Commercial Credit Co., Inc., New Orleans, La., recently delivered this convincing and informing address before the Alabama Automobile Dealers' Association in Mobile. Although very frank in calling to their attention their weakness, his talk was received with complete approval and appreciation.



# EDITORIALS



## Winter Equipment

**M**OTOR truck dealers will do well to give some thought to the sale of winter equipment, especially this year when motor trucks will be required to carry on throughout the winter months uninterruptedly. In order to assist the dealer in refreshing his mind on what is required to successfully merchandise winter equipment, our next number will contain articles dealing with this subject, with illustrated descriptions of such new devices which will assist in increasing the working capacity of the motor truck throughout the winter months as well as to insure greater comfort for the driver.

The dealer will also do well to study the snow removing problem which will surely come up again this winter. Highways must be kept open. The dealer will do well to get in touch with his local Chamber of Commerce or Highway Commission to see what is being done in this direction. The time to make preparations is now.

## Priority to Road Materials

**A**N interesting bit of news comes from Ohio, which states that all railroads in this state have been ordered by the Ohio Utilities Commission to give priority at once to the transportation of road building material and machinery for the improvement of highways. This is a step in the right direction and should be followed by the railway commissions of other states. Our highways are inadequate for the avalanche of motor truck transportation which is bound to come as soon as the wheels of American industries begin to hum in high gear. It is to be hoped that with a new administration, some concerted and definite action will be taken on our road building program.

The mere fact that the railroads will not be able to clean up the transportation conditions of the country within the next five years should be sufficient incentive for the road authorities to push the matter of building new and repairing old roads in the quickest possible time so that motor trucks can give the country that degree of transportation service which they are at the present time incapable of doing—because of our lack of improved highways.

## Legislatures Are Getting Busy

**E**LSEWHERE in this issue an article appears regarding future legislation concerning the motor truck industry. This article is of particular interest to every motor truck dealer, garage man, repair man, manufacturer, in fact, anyone whose livelihood depends on the automotive industry. According to one authority who is following legislative matters thoroughly throughout the country, the coming sessions of the legislators will see more drastic bills submitted than have heretofore appeared.

In this article one point which stands out prominently, at this time, is that we have too many associations in the automotive industry which are not working in harmony, or are not united so that they can use their strength politically. It is recommended that the industry should be organized by states so that when any bills are brought up enough influence can be brought by the whole industry to completely sidetrack or kill any legislation which would prove reactionary. Undoubtedly the automotive industry, credited as being the second largest in the country, could be united in such a way that its influence could be brought to bear at election time and a great many of the discriminatory and drastic measures would not be presented.

## Labor Conditions Showing Signs of Improvement

**I**N a survey made among a number of prominent motor truck and parts factories a week ago a very encouraging situation has developed, which, as time goes on, will undoubtedly result for the betterment of the industry, both in the factory and among the dealers' organizations. In many factories the production schedule has jumped considerably, regardless of the fact that anywhere from 10 to 30 per cent of the men have been laid off. The readjustment to conditions has increased the efficiency of those remaining on the job a great deal more than when there was a labor shortage. The curtailment and slowing down is giving many manufacturers an opportunity to weed out the inefficient workmen and has done much to stop the pernicious practice of shopping by the men among the factories.



# News of the Trade in Brief

(For Factory Items, Personals, New Incorporations, Etc., See Pages 102-106)

## Of Interest to Lubricating Engineers

Papers read before American and British Technical Societies by Messrs. Wells and Southcombe of London, England, on: "THE THEORY AND PRACTICE OF LUBRICATION. THE 'GERM' PROCESS," contain revolutionary information regarding lubricating oils and have been received with great enthusiasm.

The authors have proved that the addition of small percentages of suitable fatty acids to mineral oils considerably increase their friction reducing properties—thereby making it possible to combine the "oiliness" of fatty oils with the cheapness of mineral oils.

The practical utility of the "Germ" process, which is patented throughout the world is considerable. It eliminates the use of fatty oils in lubrication, improves the efficiency of mineral oils, and enables,

in many cases, an inferior oil treated with fatty acid, to satisfactorily do the work of a more expensive grade oil.

Additional information can be obtained from the Henry Wells Oil Company, 11 Haymarket, London, England.

## Stockholders Ask for Receivership

Huffman Brothers Motor Co., manufacturers of trucks and cars, Elkhart, Ind., has had a petition of stockholders file a suit in Omaha, Neb., asking that a receivership for the company be appointed, and that an accounting be rendered. The petition alleges that certain officers of the company are not duly elected by the stockholders, and that they be enjoined from exercising duties as officers of the company. The company's attorney has made a general denial, and affirms that the suit is brought merely to embarrass the company.

## Prepare for Winter Truckportation

Business organizations, automobile clubs, public officials and all interested in motor transportation are being asked to co-operate in making plans for snow removal from highways during the coming winter.

There is but slight possibility that railroads can increase their transportation facilities sufficiently to meet all needs this winter. Consequently, as experience has taught us, the necessity of keeping the highways open for motor traffic is strikingly apparent. A recurrence of the snows such as blocked the roads for weeks last winter would cause a critical condition both in an economic and business sense this winter.

The highway departments of most states in the snow belt are alive to this necessity of snow removal and are preparing, but the state officials must have

September 13 to 18, 1920—Syracuse, N. Y. Eightieth Annual State Fair. Passenger Cars, Trucks, Tractors. J. Dan Ackerman, Jr., Sec'y.

September 14 to 17, 1920—Douglas, Wyo. Sixteenth Annual State Fair. Passenger Cars, Trucks, Tractors. E. Ewel, Sec'y.

September 17 to 25, 1920—Peoria, Ill. Tenth Annual National Implement & Vehicle Show. Passenger Cars, Trucks, Tractors. George H. Emory, Sec'y.

September 19 to 25, 1920—Sioux City, Iowa. Eighteenth Annual Inter-State Fair. Passenger Cars, Trucks, Tractors. Motor Trades Bureau, Sioux City, Mgrs.

September 20 to 26, 1920—Los Angeles, Cal. National Tractor & Implement Show of the West. Auspices Tractor & Implement Dealers' Assn. of California. Guy H. Hall, Mgr., 169 North Los Angeles St.

September 20 to 25, 1920—Allentown, Pa. Passenger Cars.

September 21 to 24, 1920—Billings, Mont. Fifth Midland Empire Fair. Passenger Cars, Trucks, Tractors. F. M. Lawrence, Sec'y.

September 21 to 24, 1920—La Crosse, Wis. Twenty-ninth Annual Inter-State Fair. Passenger Cars, Trucks, Tractors. C. S. Van Auker, Sec'y.

September 25 to October 2, 1920—Oklahoma City, Okla. Fourteenth Annual State Fair and Exposition. Passenger Cars, Trucks, Tractors. R. T. Hemphill, Sec'y.

September 25 to October 2, 1920—Memphis, Tenn. Thirteenth Annual Tri-State Fair. Passenger Cars, Trucks, Tractors. Frank D. Fuller, Sec'y.

September 27 to October 1, 1920—Trenton, N. J. Thirty-third Annual Inter-State Fair. Passenger Cars, Trucks, Tractors. M. R. Margerum, Sec'y.

September 27 to October 2, 1920—Buffalo, N. Y. Closed Car Show, Elwood Music Hall. C. C. Proctor, Mgr.

September 28 to October 1, 1920—White River Junction, Vermont. Fourteenth Annual State Fair. Passenger Cars, Trucks, Tractors. F. L. Davis, Sec'y.

September 27 to October 2, 1920—New Westminster, B. C., Canada. Fifty-first Annual Provincial Exhibition. Passenger Cars, Trucks, Tractors. D. E. MacKensie, Sec'y.

September 27 to October 2, 1920—Salem, Oregon. Fifty-ninth Annual State Fair. Passenger Cars, Trucks, Tractors. A. H. Lea, Sec'y.

October 2 to 9, 1920—Chattanooga, Tenn. Fourth Annual Inter-State Fair. Passenger Cars, Trucks, Tractors. J. R. Curtis, Sec'y.

October 4 to 9, 1920—Buffalo, N. Y. Closed Car Show, auspices Auto Dealers' Assn.

October 4 to 9, 1920—Muskogee, Okla. Fifth Annual Free State Fair. Passenger Cars, Trucks, Tractors. Miss Ethel Murray Simonds, Sec'y.

## Coming Events

October 4 to 9, 1920—Salt Lake City, Utah. Forty-second Annual State Fair. Passenger Cars, Trucks, Tractors. D. W. Parrott, Mgr.

October 4 to 14, 1920—Richmond, Va. Fifteenth Annual State Fair. Passenger Cars, Trucks, Tractors. W. C. Saunders, Sec'y.

October 5 to 9, 1920—Minneapolis, Minn. Closed Car Show. Walter R. Wilmoth, Mgr., 709 Andrus Building.

October 6 to 16, 1920—New York. New York Electrical Exposition, three floors, Grand Central Palace, includes Electric Passenger Cars, Trucks, Industrial Trucks, Batteries. George F. Parker, Mgr., 124 West 42nd St.

October 19 to 24, 1920—Dallas, Texas. Thirty-fourth Annual State Fair. Passenger Cars, Trucks, Tractors, Accessories. W. H. Stratton, Sec'y.

October 11 to 16, 1920—Meridian, Miss. Tenth Annual Mississippi-Alabama Fair. Passenger Cars, Trucks, Tractors. A. H. George, Sec'y.

October 16 to 26, 1920—Atlanta, Ga. Southeastern Fair Assn., Fifteenth Annual Fair. Atlanta Auto Assn., Managers of Show, 305 Connolly Bldg.

October 18 to 23, 1920—Jackson, Miss. Seventeenth Annual State Fair. Passenger Cars, Trucks, Tractors. Mabel L. Stire, Sec'y.

October 18 to 23, 1920—Raleigh, N. C. Fifty-ninth Annual State Fair. Passenger Cars, Trucks, Tractors. Joseph S. Pogue, Sec'y.

October 28 to November 6, 1920—Macon, Ga. Sixty-fifth Annual State Fair. Passenger Cars, Trucks, Tractors. Harry C. Roberts, Sec'y.

October 30 to November 14, 1920—Waco, Tex. Eleventh Annual Cotton Palace Exposition. Passenger Cars, Trucks, Tractors. S. N. Mayneld, Sec'y.

November 7 to 12, 1920—Lewiston, Idaho. Twelfth Annual Northwest Livestock Assn. Fair. Trucks and Tractors.

November 8 to 13, 1920—Phoenix, Arizona. Sixteenth Annual State Fair. Passenger Cars, Trucks, Tractors. Shirley Christy, Sec'y.

November 14 to 21, 1920—New York. Automobile Salon, Hotel Commodore, Auto Salon, Mgrs., 785 Fifth Ave., New York.

November 18 to 27, 1920—Jacksonville, Fla. Fourth Annual State Fair and Exposition. Cars, Trucks, Tractors. B. K. Hanafourde, Sec'y.

February 5 to 12, 1921—Minneapolis, Minn. Winter Show. Walter R. Wilmoth, Mgr., 709 Andrus Building.

February 7 to 12, 1921—Columbus, Ohio. National Tractor Show, State Fair Grounds. W. W. Whaley, Springfield, Ohio, Gen. Mgr.

March 15, 1921—Fort Worth, Tex. Twenty-fourth Annual Southwestern Exposition & Fat Stock Show. Passenger Cars, Trucks, Tractors. M. Sansom, Jr., Sec'y.

## CONVENTIONS

Atlantic City, N. J., October 22 to 25, 1920—Twenty-seventh Annual Convention National Implement & Vehicle Assn., Traymore Hotel.

Chicago, Ill., October 11 to 13, 1920—National Association of Purchasing Agents.

Chicago, Ill., October 12 to 14, 1920—National Federation of Implement & Vehicle Dealers' Association. H. J. Hodge, Sec'y, Abilene, Kan. Sherman Hotel.

Cincinnati, Ohio, December 8 to 10, 1920—Ohio Automotive Trade Assn. E. J. Shoyer, Sec'y, 404 Central National Bank Bldg., Columbus, Ohio.

Cleveland, Ohio, September 16 to 17, 1920—Credit Convention of the M. & A. M. A.

Greensboro, N. C., September 24 to 25, 1920—Second Annual Convention North and South Carolina Automotive Trade Assn.

Guilford, Miss., October 6 to 7, 1920—Fourth Semi-Annual Convention, Louisiana-Mississippi Automotive Trades Assn.

Los Angeles, Calif., October 1920—Southern Division, California Automobile Trade Association.

Milwaukee, Wis., September 27 to October 1, 1920—Ninth Annual Safety Congress of the National Safety Council.

Minneapolis, Minn., January 11 to 13, 1921—Annual Convention of the Minnesota Implement Dealers' Association, West Hotel. C. I. Buxton, Sec'y, Owatonna, Minn.

Nashville, Tenn., November 12 to 14, 1920. Tenth Quarterly Meeting, Southern Automotive Jobbers' Assn.

## FOREIGN EVENTS

Brussels, Belgium—December 10 to 19, 1920—First Post-War Show, Palais du Cinquantenaire, auspices Chambre Syndicate de l'Automobile.

London, England—September 4 to 25, 1920—Machine Tool & Engineering Exhibition, auspices Machine Tool Trade Assn., Inc., Olympia.

London, England—October 15 to 23, 1920—Commercial Vehicle Show. November—Passenger Car Show, Olympia.

Paris, France—October 1 to 6, 1920—Tractor Competition and Demonstration, auspices Ministry of Agriculture.

Sydney, Australia—January 7, 1921—Australian Motor Show.

Utrecht, Holland—Spring, 1921—Fifth Annual Industrial Fair, with International Exhibits.

the co-operation of every county and town official to make this work effective. Aroused public opinion is often necessary to insure this co-operation.

It is apparent that with millions invested in motor cars and trucks and other millions invested in roads, it is poor business policy to allow them to be unused for many weeks out of each year because of snow. The cost of snow removal is small compared with the benefits that will accrue from having open roads.

### Tire Law Concerning "Seconds" Laid Down

The Better Business Bureau (vigilance committee) of Indianapolis, which is affiliated with the National Vigilance Committee of the Associated Advertising Clubs of the World, has issued a bulletin for the guidance of local tire retailers which will be of general interest in the movement to have "seconds" described as such in all advertising. The Indianapolis bulletin is as follows:

1. Where tires are advertised without stating whether firsts, seconds, blemished, etc., it will be considered that such tires are represented as "firsts."
2. Tires which do not carry both the factory serial number and name of the manufacturer shall be classed as "seconds" and so advertised.
3. Tires which are advertised as "slightly blemished" or "N. F. C." must in fact be of this class and carry the factory guarantee applicable to tires of this class. Unless such tires are backed by the manufacturer, they can only be regarded as "factory rejects" or "seconds."
4. Where tires are advertised as guaranteed, this shall mean that these tires are guaranteed by the manufacturer, unless it is made plain in the advertisement that such guarantee is that of the dealer and not the manufacturer.
5. The Bureau regards as misleading, unfair and destructive of confidence, tire advertising offering two tires for the list price of one, or for some such sum as \$1.00 extra, unless the quality and make of such tires is plainly stated. A general statement that among these tires are such well known makes as Goodyear, Goodrich, Fisk, Firestone, Miller, etc., unless the dealer has a fairly representative quantity of the well-known makes named, should not be permitted to appear. The general statement, in connection with the mention of such well known makes, that "some are firsts," will be taken to mean that "firsts" of these tires may be obtained at the prices named.

### Congress Must Continue to Support Good Roads

Unless Federal action is taken during the current fiscal year concerning Federal aid in road building the resulting uncertainty as to the future of this work will seriously handicap the United States and cause the entire road-building program to suffer a serious setback, according to Thomas H. McDonald, chief of the Bureau of Public Roads, United States De-

partment of Agriculture. In discussing the need of Federal action this year Mr. MacDonald points out that the last installments of Federal aid funds, namely, \$100,000,000, became available July 1, 1920. When to this is added at least an equal amount of State funds, as required by law, if States are to secure Federal aid, funds will be available sufficient to carry the road construction program forward for the current year. But Mr. MacDonald points out that the States should know at least a year in advance what funds are to be available in order that plans can be made for future construction.

"Under the law the States are required to enter into formal agreements with the Secretary of Agriculture for the construction upon which this money is to be used before July 1, 1922. To do so, however, will mean that the States must survey, plan and let contracts for at least \$200,000,000 worth of Federal aid road construction in the next two years.

The States have had four years in which to prepare for the expenditure of the large funds which now become available. They expect to be able to handle them. What is of greater concern to them at this time is the condition which may result if Federal appropriations are permitted to lapse. The highway departments should know at least a year in advance what funds are to be available in order that plans may be made for future construction. Unless further Federal action is taken in the coming year, the States will be left in doubt as to the future policy of the Government, and the amount of money they must be prepared to expend. Such a contingency would involve a serious setback to the progress of road construction and should be avoided by early congressional action.

### British Trade Bad

The British Automotive Trade has slumped almost to the vanishing point. General conditions have never been so bad as now. Heavy taxation last May created an economy wave, and many high priced car orders have been cancelled. This is the report from across seas. It is stated that dealers placed large orders, hoping for at least fifty per cent. allotment, but the manufacturers are cramming their show rooms with 75 and even 100 per cent. of their orders. War worn cars and trucks, bought by traders with profit expectations, would be gladly sold now at a loss. The American car situation is as bad, it is reported. Hundreds of cars are at the docks, and cannot be cleared for lack of funds, and the fear is felt that they may be put on the market for whatever they will bring. The English banks will not grant a cent of credit for American automobiles. The banks are too heavily interested in the British motor companies, most of which are in anything but a happy state. The trade has been spoiled by the abnormal prosperity of the past eighteen months. There is the possibility, of course, that the Government may comprehend that the excessive taxation, especially the 60 per cent. excess profits tax, is stopping all new business and prohibiting expansion.

### Transport Truck Company Makes Rapid Strides

The Transport Truck Co., Mt. Pleasant, Mich., which was organized July 22, 1918, has made rapid advances since its inception despite hampering influences, such as war-time restrictions, material shortages, poor and unreliable railroad facilities, and other serious difficulties.

The new plant, which this company is now building to still further expand its facilities, is indicative of the growing success and rapid advancement of this organization. This company's power plant has been doubled in capacity, and an important step taken in the direction of continuous operation by the installation of an additional boiler, a duplicate set of pumps and duplicate air compressor equipment. These improvements eliminate the possibility of delay of manufacture because of insufficient supply of heat and air.

An all-concrete loading dock, made necessary by the constant increase in shipping, is now in course of construction. This dock will have a canopy roof sufficiently large to fully protect all trucks from the weather. The dock is of just the proper height to be flush with the car floor, thus assuring greatest possible ease in loading. Provision is made for end-loading as well as side-loading.

### Bethlehem Affairs in Good Shape

A petition for a receiver has been granted on a bill in equity filed by Keck & Brothers, Allentown, Pa., on a claim for lumber of \$26,306 against the Bethlehem Motors Corp., Allentown, Pa. The corporation owes \$1,700,000 to banks in New York, Chicago, and Boston, and these bank creditors had decided to ask for a receiver. Clinton Woods, who has been general manager of the company since last May, was named receiver by Judge Dickinson, with authority to continue the business. It is alleged by counsel of both the creditors and the corporation that the corporation is solvent. Assets were estimated at \$4,900,000 and liabilities at \$3,000,000. Counsel said too much capital had been used upon the plant, and not enough devoted to proper operation. About 1000 men are employed, many of whom are stockholders. Reorganization of the corporation, with issues of new stock, is believed to be contemplated by the banks. The main plant has a capacity of more than 6000 trucks a year. Extensive plant additions have been underway the past few months, and a light passenger car, designed chiefly for export, has been developed, and experimental work on a new design of motor bus has been going on. Field men have been at work fostering the establishment of motor bus lines.

The Ninth Annual Safety Congress of the National Safety Council will be held in Milwaukee, Wis., September 27 to October 1. An attendance of four thousand is expected; safety engineers, industrial relations managers, municipal traffic officers, educators and plant executives.



## Manufacturers Insist Truck is Essential

The convention of the Motor Truck Manufacturers' Association, held in Chicago, urged that the motor truck as an essential agency in production and distribution should be brought directly to the attention of the banker whose financial aid is needed to put the industry on a firm footing.

In bringing the matter to the attention of the banker emphasis will be laid on the fact that the people of the country have voted huge appropriations for the construction and improvement of highways, and that vehicular transportation must be provided to make these highways produce their full value.

The convention was one of a number of informal conferences to bring the members of the association together for discussing individual problems and of exchanging opinions that will aid the individual manufacturer in overcoming obstacles which another manufacturer may have met and overcome. The association intends to be a clearing-house of ideas through close co-operation.

## Overture to Make the Advertising Fund Immune Against the Tax

That efforts, to attempt to retain the advertising fund for business development, are being expended by some of our future visualizing men of the industry, who can see the good business necessity of protecting such a fund against taxation is shown by the following letter which was written to Hon. Joseph W. Fordney, Chairman Ways and Means Committee of the House, by Roy G. Owens, vice-president, the Lakewood Engineering Co., Cleveland, O.

For years Mr. Owens has advocated that business concerns set up an "Advertising Reserve" in their accounts, for the purpose of spending it when slack markets required it. The average business man could not see it, because he does not understand how advertising operates. He spends money when business is good and stops when it is bad. He thus nullifies much of his expenditure's efficiency.

This setting of a reserve is good business practice. The government can well afford to develop efficient business practice among its taxables—for it makes more business to tax! Can a Congressman see so far ahead?

Read the letter, and if you think well of the idea, say so to Congressman Fordney:

Hon. Joseph W. Fordney,  
Chairman, House Ways and Means Committee,  
House of Representatives, Washington,  
D. C.

Dear Sir:

It is a well-known fact that during times of business depression it is the tendency of manufacturers to curtail their advertising appropriations and expenditures. It is also well-recognized that this is the time when appropriations and ex-

penditures for advertising should be increased.

The progressive, wide-awake manufacturer is alive to the need of advertising to create a demand; he appropriates accordingly. In contrast, we have the manufacturer who only advertises when he has accumulated a large surplus as a result of abnormal demand, and feels that he can spend a few dollars for advertising his product. The latter manufacturer when he scents a little deviation from "the big demand," immediately cuts his advertising appropriation. He virtually pulls his head down on top of him. If means can be found to promote advertising in such times, the reaction will be far less severe and the whole country will be immeasurably benefitted.

We believe that if provision were made whereby manufacturers could set up during times of so-called "good business" an account to be known as "Reserve Advertising Fund," which would be non-taxable, and which could be drawn upon for advertising only during a recognized imminency of business depression, a great many manufacturers would take advantage of such condition, thereby minimizing the actual occurrence of a business depression.

May we not ask that you use your office, so far as consistent, in enacting such legislation?

Yours very truly,

ROY G. OWENS, Vice-President,  
The Lakewood Engineering Co.

## Federal Aid Road Building

Road operations under the Federal aid road act aggregate in length nine times the distance between New York and San Francisco. Federal co-operation with the states on an approximately fifty-fifty basis has counted more than any other factor. Sixty per cent. of the roads thus built with the help of Federal funds are of bituminous concrete, Portland cement concrete and vitrified brick.

Federal road funds are under the Department of Agriculture, and may be expended only for construction, and must not exceed fifty per cent. of the value of the roads. Up to June 30, 1920, 2,985 projects involving a total of 29,319 miles of road have been approved by the secretary of the department. Preliminary estimates of cost is about \$384,900,000, of which approximately \$163,841,000 will be approved as Federal aid. On the same date 2,116 projects totalling about 15,944 miles had either been completed or were under construction.

## Good Roads Expert Wanted

The Cleveland, Ohio, Commercial Car Dealers' Association is asking all local civic organizations to forget their differences of opinion as to road damage, and as to what constitutes the best building and maintenance methods, and work constructively for the betterment of road conditions. The association desires to raise money to employ an expert good

roads adviser. It also desires to take away from the county authorities all road building and commit it to a competent, centralized State Highway Department.

## New Orleans Truck Owners Move Freight

Truck owners in New Orleans, La., are working together to move the enormous mass of freight that is piled up at railroad and waterfront points in the city. The Frank Weinberger Automotive Parts Company took the initiative and are acting as a voluntary clearing house for truck owners and merchants, receiving cash from merchants and paying it to truck owners. Railroad officials have promised every possible help, including prompt notice of shipments, and the aiding of the trucks to get at the goods in cars or warehouses. Water freight carriers are doing likewise. One hundred and fifty trucks have been organized, and a second fleet of 150 is practically ready.

The Association of Commerce, the Joint Traffic Bureau, the Board of Trade, and other civic and commercial organizations are uniting with the Weinberger Company, and the city merchants are overjoyed at the relief that is in sight. If the plan turns out satisfactorily it will be advertised throughout the country, and details furnished other cities.

## Good Roads Slogans Correspondence

The drop forge department of the Union Switch & Signal Co., Swissvale, Pa., has recently introduced a new practice to help along the uplift movement for good roads throughout the nation, in the form of a postscript in its correspondence. This form of propaganda will do much towards influencing attention to this worthy movement. More than a hundred of these slogans of not more than two lines in length have been arranged by this company. From this list the following six have been taken:

"Build Now—Money Spent Wisely for Good Roads Will Come Back Because the Roads Will Bring It Back."

"Building Good Roads Will Help Labor Will Help Farming—Will Reduce the Cost of Living."

"Don't Stop, Look and Listen, But Go Ahead—Build Good Roads Now."

Half Our Perishable Foodstuffs Are Wasted Because of Lack of Transportation—Work for Good Roads."

"Build Permanent Highways and Find the Road to Better Things."

"Concentration is the Secret of Strength—Focus on Good Roads."

## June Exports

One thousand one hundred and sixty-two commercial cars were exported in June, valued at \$1,858,726; 11,757 automobiles were exported, valued at \$13,441,950. Of commercial cars Germany received 40, Norway 62, England 245, Canada 124, Mexico 72, Cuba 62, British India 115, Japan 32, Philippine Islands 55, British West Africa 44.

## Is the Motor Vehicle Owner Paying His Way?

In view of the large expenditures which are planned for highway improvement, it is interesting to note whether or not the motor vehicle is paying a fair amount for the use of the roads which are available at the present time. In this connection, R. E. Fulton, vice-president of the International Motor Co., manufacturer of Mack trucks, in a recent interview, expressed the opinion that the motor vehicle owner is certainly paying in full for the use of the roads, and gave some interesting figures to prove his contention.

"Motor vehicle owners in 1918 paid \$50,000,000 in automobile license fees to the various states. Including personal property taxes levied on cars in some states, excise and local charges, it is estimated that car owners paid no less than \$150,000,000. In addition, motor vehicle manufacturers paid \$33,000,000 in taxes to the Federal Government. This is a total of about \$25 for every car built. Out of 2,500,000 miles of highway in the United States only 6,250 are equal to the demands of heavy duty traffic. Motor vehicles, therefore, pay a total sum amounting to \$75 per mile for every mile of highway in the United States, improved or unimproved. For every mile capable of carrying heavy duty motor traffic motor vehicles pay yearly a sum equal to \$24,000 per mile."

## Petition Against Standard Parts

Certain stockholders of the Standard Parts Co. have filed an application in the Federal Court in Cleveland, Ohio, to restrain the corporation from issuing \$8,000,000 in notes recently authorized by the stockholders. Another suit in the Common Pleas Court by the same plaintiffs seeks the return to the treasury of 50,000 shares of stock, which, it is alleged, were issued illegally, without proper compensation. The complaint asserts that Eaton's salary as president of Standard Parts was fixed at \$34,000 per year. Stockholders were told at the Cleveland meeting that the company is prosperous and that if the financing plan went through it would be fortified for increased business. A profit of \$788,000 was reported for the four months from March to June, inclusive.

## Publicity Defeats Strike

The truck manufacturers of Cleveland, Ohio, have their plants running smoothly now, on a non-union basis. The Schacht Motor Truck Co. states that although only fifty per cent. of their men are back production is 75 per cent. of normal, the men being better contented and doing better work under the non-union plan, than when under union control and hampered by the agitators.

The United States Motor Truck Company originated a very effective enlistment of public opinion, in favor of the ending of the strike of the truck machinists. At

a meeting of the Northern Kentucky Employers' Association, H. H. Southgate, of the motor truck company, proposed page advertisements in the newspapers, and a follow-up mail campaign. The advertisements were published, and then reproduced in a four-page folder and mailed to over 20,000 people, including the wives of the machinists. Becoming acquainted with the real facts in the case the women used their influence in getting the men back to work. Among those receiving the circulars were manufacturers, merchants, clergymen, school teachers. The results were decidedly satisfactory, and as a method of peaceful persuasion was highly successful.

## Eldridge Buick Company, Seattle

The Eldridge Buick Company, Seattle, Wash., direct distributor, with the State of Washington, northern Idaho and Alaska, as territory, is now in its fine new building, Eleventh & Union Streets, with almost 30,000 sq. ft. floor space, practically all glass on two sides, four floors, a mezzanine floor, and a roof garden.

The company carries \$250,000 worth of Buick car and GMC truck parts. Used cars and GMC trucks are carried in stock. There is storage room for sixty Buicks. The display room is lofty, sixty feet square, and bright with sunshine.

Six fundamental points are always considered when President A. S. Eldridge adds a man to his organization: Loyalty, honesty, ability, health, ambition and industry. Will he be able to fill three jobs?—the one he's just left, the job he's on, and the job just ahead.

Harry Young, in the service department for seven years, is now superintendent of the Seattle Retail Department. Paul Kline is service manager. Including the retail and wholesale buildings in Seattle, and the three branches at Spokane, Yakima and Walla Walla, over 300 men and women are in the company's employ. The business started in 1912 with three men, including the present head of the firm.

## Short Line Survey

The Government and the National Automobile Chamber of Commerce, through its truck committee, will make a joint survey of the six hundred and fifty short-line railroads of the country, the object being to ascertain if it is practical to relieve the strain upon the railroads by the diversion of much of the short haul business to trucks. The survey, incidentally, is likely to make inventory of the valuable service now being performed by motor trucks in relieving railroad congestion at terminals, which is one of the most serious problems in transportation today. Government figures report 650 so-called short-line railroads, each not exceeding 100 miles. These roads have a total of 16,000 miles. There are 417 of them each less than 25 miles long, and about 160 roads have less than 10 miles each.

## Bus Meets Trolley Strike

Akron, Ohio, recently experienced a trolley strike lasting 12 days. During that time 84,687 workers were transported daily by automobiles. The entire population of 208,000 people was moved by motor vehicles.

Most of the 65,000 employees of the 22 rubber companies were transported by motor bus lines established by the companies. The problem was further complicated by the fact that the rubber factories were working three shifts.

During the 12-day period more than 130,000 employees were transported by The Goodyear Tire & Rubber Company trucks and motor busses and the total distance traveled in the 2100 trips was approximately 14,000 miles. This is a distance greater than two round trips between New York and Los Angeles.

Routes were laid out in all districts reached by the trolleys and scheduled stops were made at fixed points. Employees went to the nearest stop and with the knowledge that a truck would be there at a certain time, were assured speedy transportation to the factory or the stop nearest their homes.

According to records in the time-keeping departments, truck service was more efficient than the trolleys. During the 12-day strike period there was no serious increase in tardiness among the thousands of Goodyear employees.

## National Cost System Adopted

At the general meeting of the motor truck members of the N. A. C. C., held at the Hotel Commodore, New York City, on June 3, upon recommendations of the motor truck committee and the convention of service managers at Indianapolis, the national standard truck cost system was adopted.

It is recommended that truck manufacturers, dealers and users utilize it in computing truck operating costs.

Further information regarding this system may be obtained from the office of the National Automobile Chamber of Commerce.

## Hare's Motors Dinner

Hare's Motors, Inc., New York City, held its first organization dinner in New York on August 3. Executives from engineering, production and distribution departments were present, forty-five in all, as well as the heads of several large distributing organizations.

President Hare expressed his conviction that the recent action of the Interstate Commerce Commission in granting an increase to the railroads was one of the most constructive steps taken in years, and would contribute tremendously to the prosperity of the country, not only in eventually reducing the cost of living, because of better transportation, but in the general confidence it would give capital.



## The Annual Milwaukee Truck Show Presented a Novel Setting in Its "Trucktown"

**D**ETERMINED to make their annual truck show at the Wisconsin State Fair at Milwaukee something different this year, Milwaukee dealers and distributors built a "Truck Town" at the fair grounds and on the streets of this miniature city they put their trucks on exhibition, and demonstrated to the thousands of visitors the many ways in which modern motor trucks accomplish big transportation economies.

"Truck Town" consisted of well-built houses for each of the exhibitors, arranged along parallel streets, with the trucks parked between the houses. The town had a mayor, M. D. Newald, Stewart truck distributor, and it had its own motor fire apparatus 'n everything that any well-regulated city ought to have.

Bodies of almost every conceivable type were mounted on the trucks, so that demonstrations of all kinds could be made both on the streets of the fair and on the big lot adjoining the town. Motor buses also were exhibited and these carried visitors from place to place to show them how pleasant a motor bus can be.

Trailers were given a special exhibit space, and several different kinds were shown.

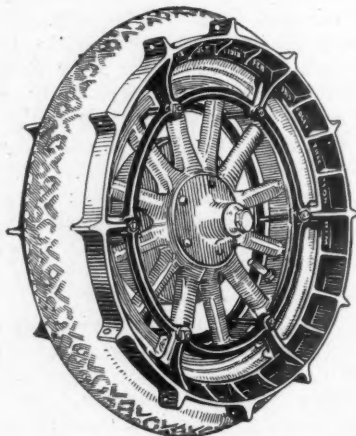
The dealers and the trucks they displayed were as follows: Mack International Motor Truck Co., Mack; J. F. Derse Co., Commerce; White Auto Co., White; M. D. Newald & Co., Stewart; Bluem & Hartung, Atterbury; Titan Truck Co., Titan; West Side Buick Co., G. M. T.; Curtis Auto Co., Reo; Chevrolet Motor Co. of Milwaukee, Chevrolet; Herford White Co., Graham; Charles Abresch Co., Bodies; The Heil Co., Bodies; Pauley Motor Truck Co., Federal; Motor Products, Inc., Republic; Coerper Motor Co., Sandow; Schmidt Motor Co., Clydesdale; Alfred Reeke Co., Nash; Motor Truck Service Co., Master; Parker Motor Truck Co., Parker; Samson Tractor Co., Samson; E. K. Wagner, Menominee; Stoughton Wagon Co., Stoughton; International Harvester Co. of America, International; Elkhart Sales Co., Huffmann;

John H. Ryan Motor Truck Co., Diamond T; Downer Garage and Sales Co., Winther; Osmond Motor Car Co., Paige; March Motors Co., Duplex; Edwards Motor Car Co., Dodge Bros.; E. W. Clark Motor Co., Maxwell; Frint Motor Car

Co., Oldsmobile; KisselKar Co., Kissel; Sterling Motor Truck Co., Sterling; Bitter Motor Co., Oshkosh Four Wheel Drive; J. F. Weber Co., Garford; Lintner Motor Sales Co., Denby and Atlas; Auditorium Garage Inc., Reliance.

## Foley Adds Traction Rim for Pneumatic-Tired Trucks

**T**HE success with which Foley traction rims have met in truck performance is now but a page in history. These traction-makers for solid-tired trucks have won universal approval, and it is a daily occurrence for this Minneapolis concern to ship rims to all sections of the United States and many of the foreign countries.



Foley Rim for Pneumatic-Tired Wheels

H. B. Foley, president of the Foley Traction-Rim Co., 827 Hennepin Ave., Minneapolis, Minn., and inventor of the Foley rim, for some time past has seen the rapidly-growing popularity of pneumatic tire equipment for trucks and has been working on a tractor rim to cover

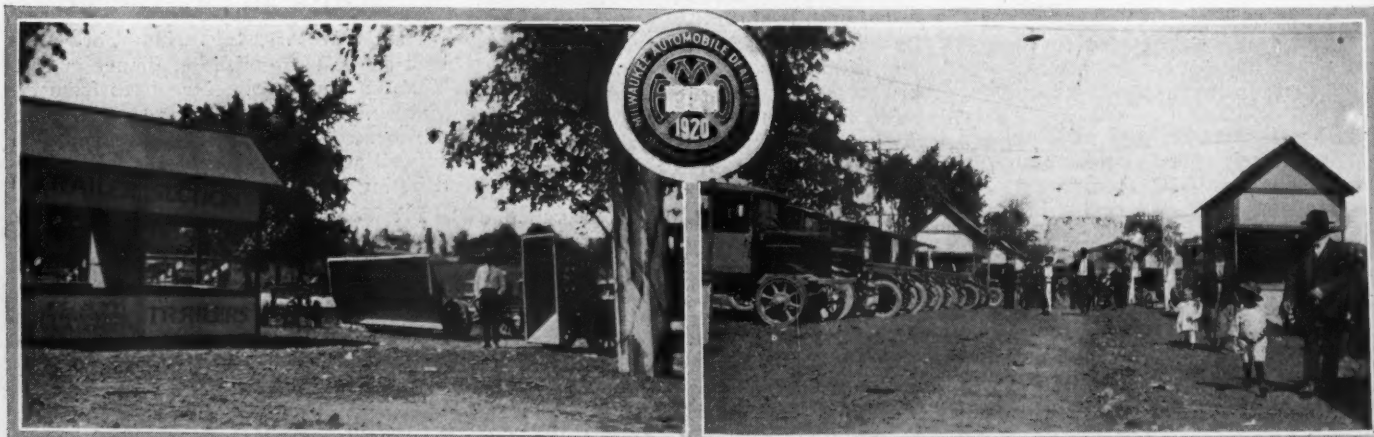
this field. After every conceivable test had been made, his pneumatic traction rim for 1-ton trucks using 30 in. or 32 in. size pneumatic tires, such as the Ford 1-ton truck, was placed on the market and the Foley Company predict a big future for this, his latest invention.

The action of these rims for both solid and pneumatic-tired wheels is automatic, simple and practical. On hard roads they do not come into action at all, as the rubber tires are then amply sufficient for traction. However, as soon as soft roads are reached and the tire sinks into the ground the traction rim comes into use. Its extra surface bearing, which prevents sinking, together with the many traction lugs take hold so firmly that the drive wheels cannot spin—thus affording traction.

In case of a puncture or a blowout a pneumatic-tired truck equipped with Foley rims could be driven without danger to casing or tube. These rims on pneumatic-tired trucks protect the side wall of the tires from tearing when operating in rutty road conditions.

They are made in two styles, a split rim for the inside of the wheel and a solid for the outside, of the best quality of electric steel castings. This construction dispenses with removing the wheel to make application of inside rim.

Provision is also made for the quick application of non-skid chains also furnished by the Foley Traction-Rim Co., which are applied to the cleats on the rim, for use on hard, slippery roads only.



Street Scenes of Milwaukee's Annual Auto Show "Trucktown"

# NEW COMMERCIAL CARS



## The Three Bridgeport Models Are Replete With New Features

**T**HE Bridgeport Motor Truck Co., Bridgeport, Conn., is in production with three chasses of  $1\frac{1}{2}$ ,  $2\frac{1}{2}$  and  $3\frac{1}{2}$  tons capacity, which will be known as Models A, B and C, respectively. While the design is conventional in many respects, containing principles endorsed by sound engineering practice, it has many interesting features. It is the result of the co-ordinated efforts of men who are experienced in the motor truck industry and who have made an intensive study of motor highway transportation. Effort has been directed towards producing a high grade truck, one that can be serviced at low cost. Consideration has been given to the problem of service, of reducing the stock of spare parts carried by the dealer to a minimum by the standardization of certain components in all three chasses.

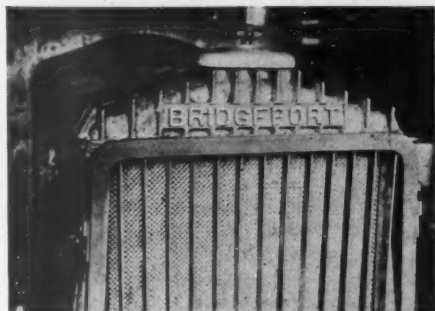
### Novel Engine Suspension

Among the interesting features, and which is employed on all models, is the suspension of the engine. It is the conventional three-point, but instead of the rear supports being rigidly attached to the frame use is made of a form of spring suspension. Substantial manganese bronze brackets are anchored to the side rail of the frame and the engine legs rest on these. A spring tensioned bolt passes through the leg and bracket, and statement is made that the springs take all torque strain. In one of the tests made of the suspension one rear wheel was jacked up to a height of 24 in. and the engine run four hours. Even under this abnormal operating condition it is claimed that no strains or stresses were communicated to the engine. A similar suspension is employed with the radiator.

Another novel feature, used on the  $3\frac{1}{2}$ -ton only, is the use of both a Hotchkiss drive and radius rods. The radius rods differ from the conventional in that instead of being a one-piece construction and rigidly anchored at either end, they are spring tensioned. The rod is constructed in two sections. That anchored to the rear axle has a form of clevis at its forward end and is attached to an eye in a manganese bronze plunger carried in a bracket which is integral with the front of the rear spring bracket. The radius rod plunger has a steel recoil spring at its forward end and there is a thrust spring at its rear. The recoil spring is retained by a spanner nut, and the maximum movement of the plunger or spring elongation is approximately three-quarters of an inch. The plunger is machined within close limits and the

construction is claimed to be dustproof. One supply of lubricant is held to be sufficient for six months' service. Any wear is automatically compensated for. The design provides a double factor of safety in the drive in that should a spring break the radius rods would function.

A noteworthy feature is the liberal use of manganese bronze instead of the usual



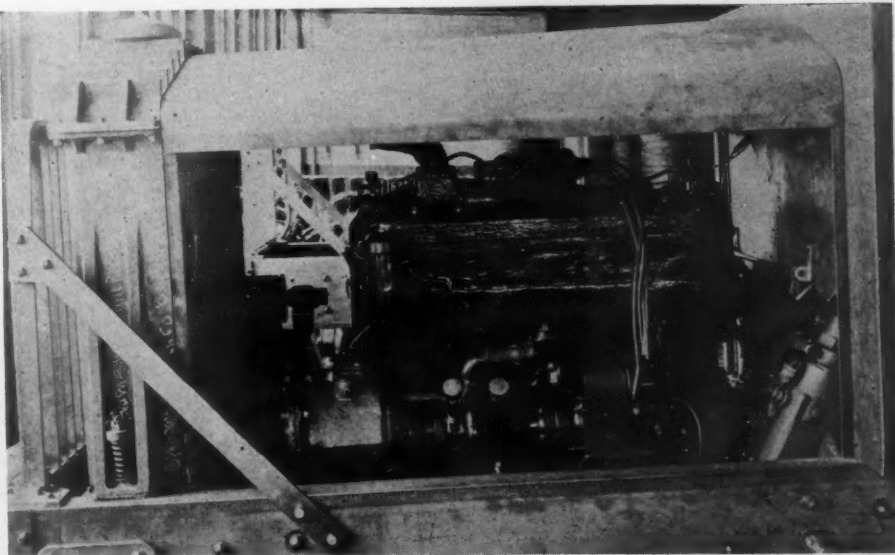
The Radiator Filler is Large and Water Supply Can be Renewed With a Pail Without Splashing

materials. Such units as the radius rod brackets, spring brackets, propeller-shaft-bearing-housing, floor board ledges, spring eye bushings, inlet and outlet water pipes of the radiator, etc., are constructed of this material, which is cast in the foundries of the company, which has its own heat treating plants, as well as its own equipment for cutting worm gears.

Those parts most subject to wear and neglect are made oversize and claim is made that there will be 40 per cent. less replacement than with the conventional dimensions. On the  $3\frac{1}{2}$  and  $2\frac{1}{2}$ -ton chasses the rear bracket of the front spring is a heavy manganese bronze casting, securely anchored to the inside of the frame rail. Its bushing is pressed through the frame and bracket and there is a space of  $\frac{1}{4}$  in. between the shackle and the frame. This space is taken by a bronze bushing or collar. All spring bolts are hardened and ground, have grooves and oil wicks for lubrication, and the bolts are locked by a nut which is cotter-pinned.

### Sturdy Frames a Feature

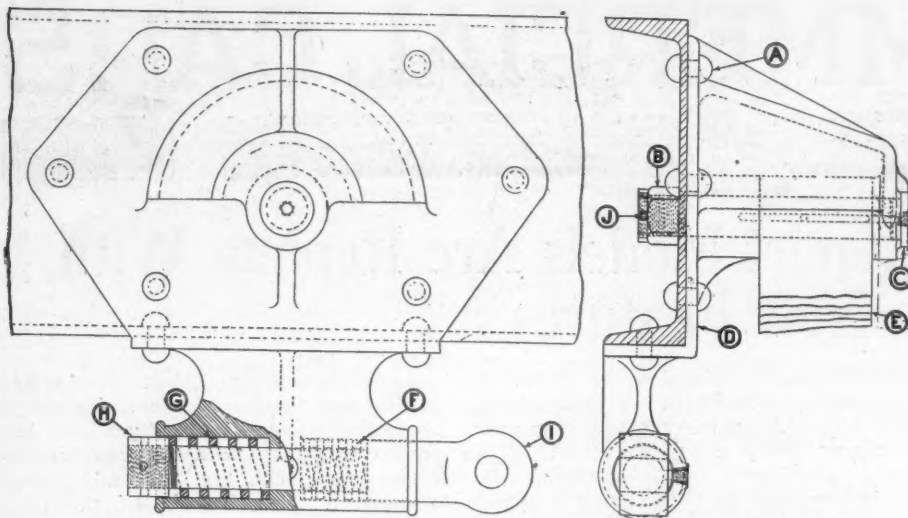
The frames of all models are of the flexible type and are unusually deep. That of the  $3\frac{1}{2}$ -ton is constructed of 24 in. stock, 10 in. deep, and has a  $2\frac{1}{2}$ -in. flange. The standard overall length is 249 in. and a special size of 18 ft. is made for dump bodies or heavy duty work, while that for bulky and light loads is 22 ft. The standard dimensions of the  $1\frac{1}{2}$ -ton are: Length, 200 in. overall; width, 32 in.; depth, 6 in.; flange,  $1\frac{3}{8}$  in.; thickness, .20 in. For heavy duty work the frame is made 182 in. overall and 240 in. for light and bulky loads. The dimensions of the  $2\frac{1}{2}$ -ton are: Standard length over all 237 in.; width, 32 in.; depth, 8 in.; flange, 2.26 in.; thickness, .22 in. The frames are well gusseted and  $\frac{1}{2}$ -in. button rivets are employed.



The Top Section on Hood is Bolted to Ledges

Also showing power plant, radiator suspension and method of anchoring spring bolt with its bronze collar





**Mechanical Views of the Rear Spring Front and Radius Rod Bracket Assembly Employed in the Bridgeport Truck**

A. Rear sp. fr. and rad. rod rivet; B. Rear sp. bolt fr. end nut; C. Rear sp. bolt fr. end; D. Rear sp. fr. and rad. rod bkt.; E. Rear sp.; F. Rad. rod thrust sp.; G. Rad. rod recoil sp.; H. Rad. rod spanner nut; I. Rad. rod plunger; J. Rear sp. bolt fr. end cotter

The rear springs are guaranteed not to creep, have no center bolts, and the spring pads are so constructed as to lap over each side of the axle. A groove recess is cast in the upper and lower pads, obtaining a close fit with the spring band, and semi-circular grooves are also cast in the pads for securing the clips, which set in these recesses. This obtains practically a solid construction. The pads are of manganese bronze. An accompanying illustration shows the spring pads assembled on a spring, but without the clips attached.

#### Radiator Easily Filled

The radiators, while conventional and of the tubular type, are designed to main-



**The Radius Rod Support is Integral With the Manganese Bronze Spring Bracket**

The radius rod plunger is shown in position in its bracket, but without spanner nut or the rod proper attached

tain the cooling fluid at a point where the greatest efficiency is obtained from the engine when operating in high temperatures and under heavy loads. The depth of the core on the various models differs from  $3\frac{1}{2}$  to  $4\frac{1}{2}$  in. The design is unusually sturdy and has a filler opening that is unusually large. It is claimed that the water supply can be renewed without splashing or waste and that the filler cap cannot be lost, as it is anchored by a chain to a web in the header.

Radiator parts are interchangeable on all models. While the cooling system, pump, provides for efficiency under the most severe service the tendency towards over-cooling in winter is compensated for by a radiator shield. One of the features of the radiator is that the overflow pipe is independent of the core. It enters through the inlet water pipe into the filler and up to the top of the latter. The balance of the tube is outside. Radiator guards are standard equipment.

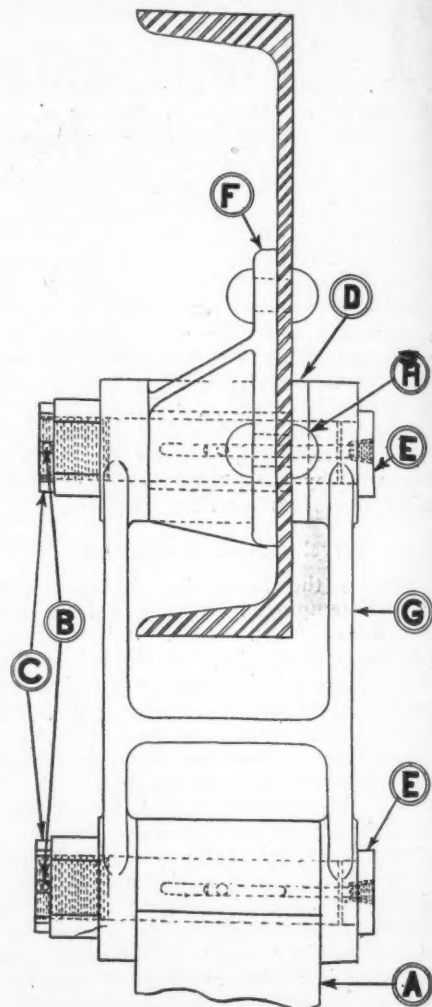
The hood is a three-piece construction, without louvers, and the upper section is bolted to the radiator and dash ledges. The sides are easily displaced when the truck is operating in abnormally high temperatures. The dash is a three-piece sheet steel construction, and the floor boards are screwed into manganese steel ledges, avoiding the possibility of rattling. The bumpers are unusually sturdy, of wood, covered with  $\frac{1}{4}$ -in. steel, secured by bolts extending through the wood. Another feature is the use of hollow cast fender brackets.

#### The Three and a Half Ton Model

The  $3\frac{1}{2}$ -ton, Model C, which lists at \$3650, f.o.b. Bridgeport, has a four-cylinder Buda YDU engine. The carburetor is a Stromberg M-2 with hot air attachment. Ignition is by an Eisemann GX4 magneto with impulse starter. The governor is a Pierce and is set at 13 m.p.h. with solid tires and at 16 m.p.h. with pneumatics. The clutch is a Borg and Beck, the amidship gearset is a Cotta, affording four forward speeds and a reverse. The gear ratios are: First, 5.2:1; second, 3.684:1; third, 1.857:1; fourth, 1:1, and reverse, 4.666:1. Hartford joints and propeller shafts are used. The propeller shaft bearing is a SKF No. 1308, carried in a manganese bronze housing.

The front springs are 42 in. long, 3 in. wide, semi-elliptic. The rear are 56 in. long and  $3\frac{1}{2}$  in. wide. All spring eyes are bronze bushed, with bushings having a  $\frac{1}{4}$ -in. wall. The rear axle is a Standard worm and the front a Shuler. The steering gear is a Ross, with driver placed at

left with center control. The brakes are conventional in design and their action is not affected by loads or inequalities of the road. Claim is made that the steering is unusually easy, that there is perfect alignment, and that the truck can be easily held in a straight line on all types of roads. The fuel stored in a 15-gal. tank located under the seat, is fed by gravity. There is a reserve of 5 gals. controlled by a separate valve. The muffler is a Vacuum and the exhaust pipe is a seamless steel tubing. The muffler is unusually well anchored and supported. The



**Sectional View of the Front Spring Shackle Assembly Used on the Bridgeport Four-Ton Model**

A. Fr. sp.; B. Springs bolt cotter pin; C. Fr. sp. bolt rear nut; D. Bushing for fr. sp.; E. Fr. sp. bolt rear; F. Fr. sp. bkt.; G. Fr. sp. shackle; H. Rivets, fr. sp. bkt.

wheels are of wood and the solid tire dimensions are as follows: Front, single, 36 x 5 in.; rear, 36 x 5 in. dual or 36 x 10 in. single. The wheelbase is 168 in.

#### The Two and a Half Ton Model

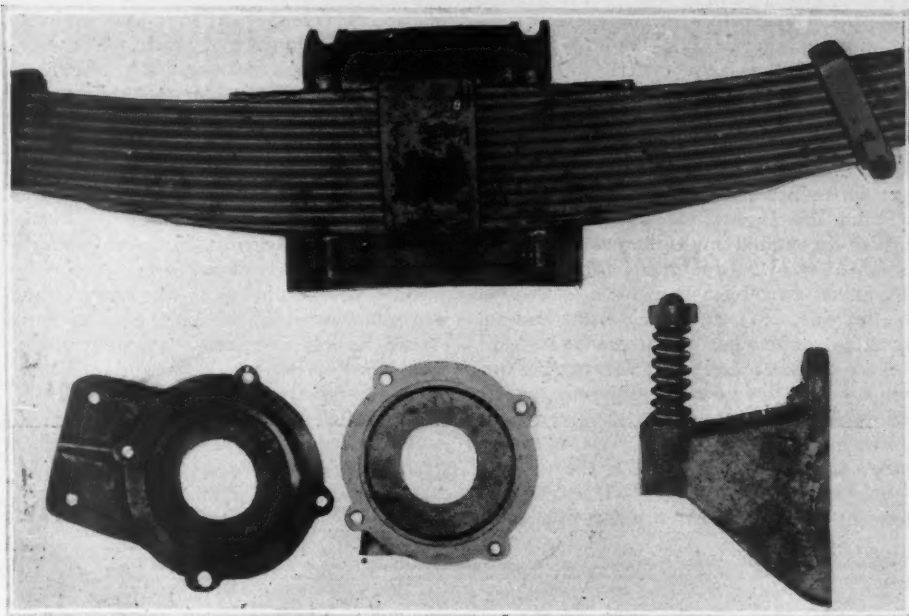
A four-cylinder Buda HTU engine, a Stromberg carburetor and an Eisemann magneto without the impulse starter is employed on the Model B or  $2\frac{1}{2}$ -ton chassis. The Pierce governor is set at 15 m.p.h. for solid tires and at 20 m.p.h. for pneumatics. The gearset is in unit with the power plant and the speeds and gear ratios are the same as in the Model C. The clutch is a Borg and Beck. The

propeller shaft and joints are Hartford and the same make of front axle, steering gear and rear axle as employed with the larger chassis are employed. The front springs are 40 x 2½ in., rear 56 x 3 in., and the wheelbase is 156 in. The driver is located at the left and the fuel supply and capacity is the same as with the Model C. The wheels are of wood and the standard tire equipment is solids, front 36 x 4 in., and rear 36 x 7 in., single. The propeller shaft bearing is a self-aligning double thrust, carried in a manganese bronze housing. The model B lists at \$2859 f.o.b. Bridgeport.

#### The One and a Half Ton Model

Use is made of a four-cylinder Buda WU engine, a Stromberg carburetor, Eisemann magneto, Borg and Beck clutch, Cotta transmission, Hartford shaft and joints, Shuler front axle and Ross steering gear in the 1½-in ton chassis. The engine is in unit with the transmission, the gear ratios of which are as follows: First, 4:1; second, 2:1; third, 1:1; reverse, 4.668:1. The driver is located at the left and the fuel supply and system is similar to the other models. The 1½-ton job differs from the others in that steel spring brackets are employed instead of the manganese bronze. The front springs are 34 in. long, 2½ in. wide; rear, 52 in. long and 2½ in. wide. The tires are solid, 34 x 3½ in. single front and 36 x 6 in. single rear. Pneumatics are listed as extra. The chassis is listed at \$2350.

Cabs are supplied as standard equipment on all three models and the seats and dashes of all are interchangeable. The chasses come with a priming coat and the tool equipment is very complete.



#### Three Close-up Views of Special Features

Lower left: The propeller shaft bearing housings are of manganese bronze which material is liberally used throughout. Lower right: Showing the engine arm bracket of manganese bronze and spring. Above: The rear spring with grooved pads in place to illustrate how creeping is prevented.

Electric starting and lighting is extra equipment and power take-offs are standard with the transmissions. There are but two grease cups on the Bridgeport chassis, on the propeller shaft bearing, and front suspension of the engine.

The Bridgeport Motor Truck Company plans a production of 200 trucks and intends to concentrate on eastern distribution. The factory is conveniently located for distribution and to obtain the units used. Dealers within a cer-

tain radius of the factory will have the benefit of factory service and effort is being directed to build up a service plan that will satisfy both user and dealer. The officers of the company are: President, R. D. Campbell; first vice-president, C. A. Latons; second vice-president, George Kramer; treasurer, A. M. Nichol; secretary, T. H. Bartley; managing director, W. J. Bartley. Henry Meunier is production engineer. Deliveries are being made on all models.

## Available in Production With a New One and a Half Ton Model

THE new 1½-ton truck, recently introduced by the Available Truck Co., North & Kilpatrick Aves., Chicago, Ill., was designed with an eye on the requirements of the average farmer, manufacturer and numerous other concerns having use for a truck of this capacity. Besides the new 1½-ton truck, known as the Commercial Wagon-8-1½, this company is building four other models.

The design of the 1½-ton truck embodies many refinements in detail, the radius rod construction is used as it was decided that it would more effectively take the drive, leaving the springs to perform their own particular function, and also to handle the torque of the axle.

The engine, which is the company's own design and is known as Model CU-3, is cast in block and has a bore and a stroke of 4 in. and 5½ in., respectively. It has an S. A. E. rating of 25.6 hp. and is capable of developing a maximum hp. of 38 at 1080 r.p.m. Ignition is through a high tension Bosch magneto and carburetion through a Stromberg carburetor, having a 1-in. opening. The intake mani-

fold is cast integral with the exhaust manifold, which construction tends to

keep the gas hot, avoiding all condensation. Lubrication is through a force-feed



#### New Available One and a Half Ton Truck

This particular job is equipped with a stake-type body, having a removable side gate



and splash system, which effectively oils all moving parts. The cooling fluid is circulated by a large centrifugal pump. The radiator, which is of a vertical finned-tube type, is suspended on double springs enclosed and working in oil at each side. The tubes, which are of oval section, reduce the possibility of freezing.

From the engine the power is transmitted through a multiple-disk dry-plate clutch of Brown-Lipe make, fully enclosed against dust by a housing attached to the engine, to a Cotta transmission mounted amidships, which provides four speeds forward and one reverse. This transmission provides the following gear ratios: Low, 5.20:1; second, 3.68:1; third, 1.85:1, and reverse, 4.66:1.

Power is transmitted from the engine to a Wisconsin worm-drive rear-axle by two supports through tubular propeller

shafts provided with four mechanically enclosed type universal joints. Thermoid in front of the transmission affords a spring-like connection to the engine. The rear axle provides a final ratio of 7.25:1. This axle is 2 3/8 in. in diam. and is of chrome, nickel steel. The front axle is of the conventional, "I" beam, drop-forged type with bearings in spindle heads. Timken roller bearings are used throughout. The tread is 56 in.

Steering is through an irreversible, worm-and-nut type steering gear, mounted on the left side at a convenient angle. The wheel is 20 in. diam. and mounted on it are the throttle and spark controls.

The rolled channel steel frame, which is reinforced by six cross members and strengthened by heavy gusset plates, is carried by four silicon manganese steel springs. These springs are bronze bush-

ed throughout, 40 in. long by 2 1/2 in. wide in front and 50 in. long by 3 in. wide with 7/8 in. spring shackle bolts in the rear.

The internal expanding brakes expand in 17 in. drums and both the service and emergency brakes work through equalizing bars. The wheels, which are wood, are equipped with pneumatic tires measuring 36 x 3 1/2 in the front, and 36 x 5 in the rear.

The standard wheelbase is 145 in. which provides 10 ft. of space behind the driver's seat. The weight of this job complete with driver's cab is 4000 lb.

The standard equipment consists of front fenders, 24-gal. gasoline tank, driver's seat, three oil-lamps, jack, tools and tool box, hubometer, power tire pump and extra rim when pneumatic equipment is specified.

## The Lorain Two-Ton Model Incorporates Many Exclusive Features

**T**HE Lorain Motor Truck Co., Lorain, Ohio, a new organization capitalized under the laws of Ohio, is entering the automotive industry with a new type of motor truck embodying many new features and lines of construction. The present factory includes two buildings with a floor space of over

10,000 sq. ft., and when the new addition which is under operation is completed its capacity will be doubled.

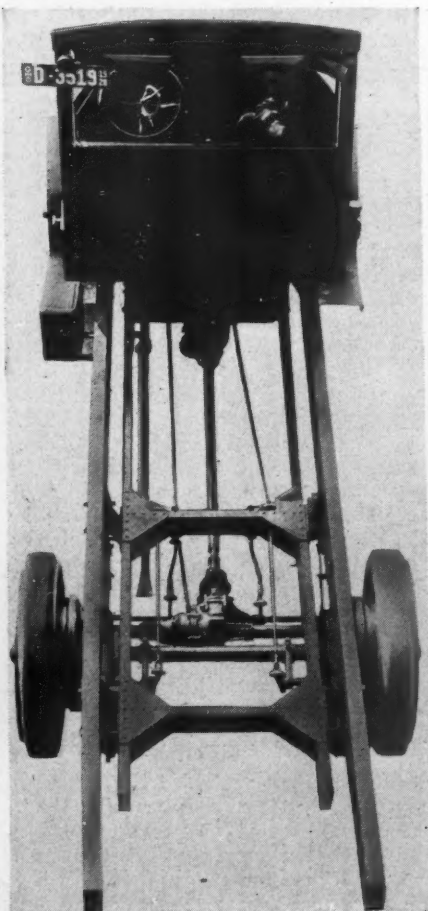
The organization is financed mostly by citizens of Lorain and vicinity and is operated and directed by the successful business men of that city. The following men are the officers: J. C. Hayes, president; M. J. Henninger, vice-president; L. J. Henninger, secretary; H. T. Jackson, treasurer; D. A. Cook, attorney; E. C. Juergens, designing engineer and general manager.

The designing features throughout the whole chassis and body mounting have a trend towards light weight, strength and efficiency. It has been the efforts of the designing engineer, E. C. Juergens, to offer a two-ton truck which has a guaranteed 50 per cent. overload.

The main feature of the Lorain truck is its maximum torque per pound chassis weight, which is 1.10-lb. pull per 1-lb.

chassis weight. Another of the new advanced features is the pay load mounting, which is carried directly over the springs but not on the steel unit frame. In this design the unit frame becomes a sub-frame and merely holds the parts in alignment. Considerable weight is saved by the design. A flexible 4-in. roll channel frame is used instead of the 7-in. and 8-in. frame used in conventional practice. This is said to permit, with a large factor of safety, the strain and weave to be readily absorbed and toned down. Load strains are also ineffective, as the load is carried right over the center line of the springs direct on 2 1/2-in. by 9-in. wood sills, which offer a resilient and firm mounting to merchandise.

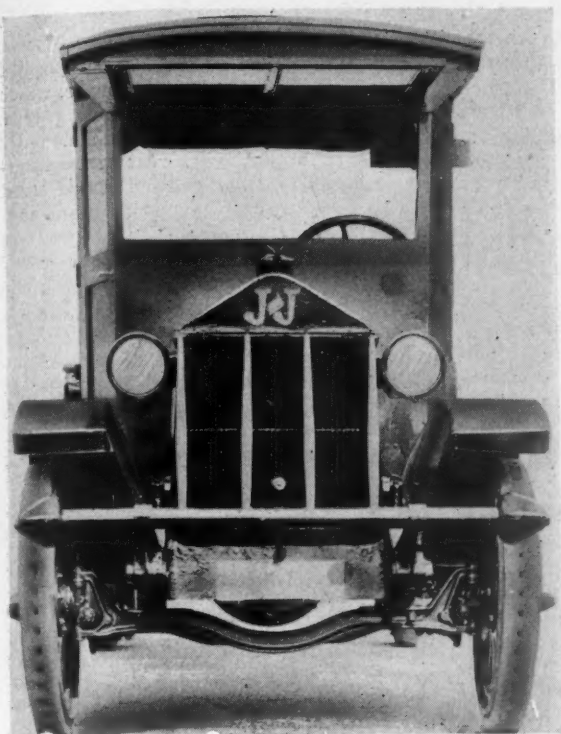
The power-plant mounting, which is on an all-wood foundation and does not touch the steel frame at any point, is another feature. The mounting is of the three-point suspension type, the front support and two rear mountings being on



Rear Elevation View of Chassis



New Two-Ton Lorain Model Equipped With a Platform Body



Front View, Showing General Design

Note the protection afforded the radiator by the solid radiator guard and bumper and arrangement of headlights

large impregnated oilless wood bearings of the ball shape type, which allows the engine to float in the chassis. No strain

been expended in perfecting a simple and efficient braking system. The efforts spent along these lines developed in a

is said to be taken by the crankcase when going over rough roads, as is the case when the bell housing is bolted firmly to the chassis. This mounting also relieves such delicate parts as the carburetor, magneto bearings and its parts, the generator, etc.

The special constructed springs which are designed to take the drive torque eliminate such parts as the shackles, bolts, bushing, grease cups, cotter pins and radius rods. Riding qualities are said to be increased by the automatic shortening and lengthening of these springs. It is at its full length under light loads and gets shorter and stronger as the load is increased.

The gasoline tank with its filler cap is on the outside of the cab. By removing four screws and disconnecting the gasoline line, the tank can be pulled out from the side of the cab like a drawer and can be replaced in a few minutes' time.

Considerable effort has

system which operates effectively under all conditions, as the truck empty or loaded does not affect the adjustment of the foot pedal one-eighth of an inch in movement. Grease cups, oil holes and other parts that demand attention and care have been eliminated and have been replaced by impregnated oilless wood bearings which require but little attention and also stops the rattle in these parts.

The feature of accessibility to permit the removal and replacement of units and parts in a short length of time was also thoroughly considered in the designing of this model. By removing six nuts and a few connections, the engine is free to be lifted out. The removal of eight nuts also permits the radiator to be lifted out and replaced in a few minutes' time. Four nuts and bolts control the brake rods, and the rear axle can be slid out from under the truck in a few moments' time.

The principal units incorporated are of standard design. The radiator, which is of the fin and tube type, is guaranteed not to burst from freezing. The gears of the transmission, which is of the four-speed type, are always in mesh and cannot be stripped from changing speeds. The shift is made with jaw clutches.

The engine which is a standard Wisconsin Model E. A. U., has the full force feed oiling system and is the best motor to be used for this purpose. The rear axle is built by the Russel Motor Axle Co.

## Short Wheelbase Two and a Half Ton Model Announced by Titan for Contractor Work

**T**HE Titan Truck Co., Milwaukee, Wis., has put on the market a special high-powered, high-speed 2½-ton short wheelbase truck, mounted on pneumatic tires, for the road contractor.

The purpose of the truck is to run directly from the source of the material supply to the mixers, over the subgrade. By the use of 36 x 6 front and 42 x 9 rear pneumatic tires all danger of cutting-up the subgrade is eliminated, and the special short-wheelbase of 128 in. makes possible short turns, which are a necessity in this kind of work. The most practical body equipment consists of a horizontal hydraulic hoist and a three-compartment body.

This truck, at a governed motor-speed of 1100 r.p.m., can maintain a road-speed of 25 m.p.h. without injury to the chassis in any way. This is made possible by the use of a big Buda engine having a bore and stroke of 4¼ in. x 5½ in., respectively, and a Clark internal-gear axle with a reduction of 8 to 1. The engine is force-feed lubricated. Ignition is by an Eisemann high-tension magneto with impulse starter and carburetion is through a Stromberg.

Power is obtained by the use of a Cotta

constant-mesh transmission having a reduction in low of 5.2:1, so that the total reduction in low is nearly 42:1. The transmission, which is in unit with the en-

gine, provides four speeds forward and one reverse.

The rear axle, unlike customary 2½-ton practice, is built with sturdy radius-rods,



Short Wheelbase Giant Pneumatic-Tire Equipped Titan Two and a Half Ton Model



permitting the use of long, flexible springs to take away the danger of injury to units from the high-speed of the truck.

Standard equipment on this chassis consists of oil dash and rear lights, powerful electric searchlight drawing its current

from generator driven from engine, driver's cab, glass windshield, speedometer, instead of the customary hubodometer, and heavy angle-iron bumper. The price of this chassis on solid tires is \$3400, f. o. b. Milwaukee; on pneumatics, \$3850.

## The New Winther Delivery Special Has a General Rating of From Three-Quarter to One Ton

**T**HE Winther Motor Truck Co., Kenosha, Wis., has recently introduced a new model which is essentially an assembled proposition of standard units. It is known as the Winther Delivery Special, which, although not having a definite rating, has a capacity of from  $\frac{3}{4}$  to 1 ton.

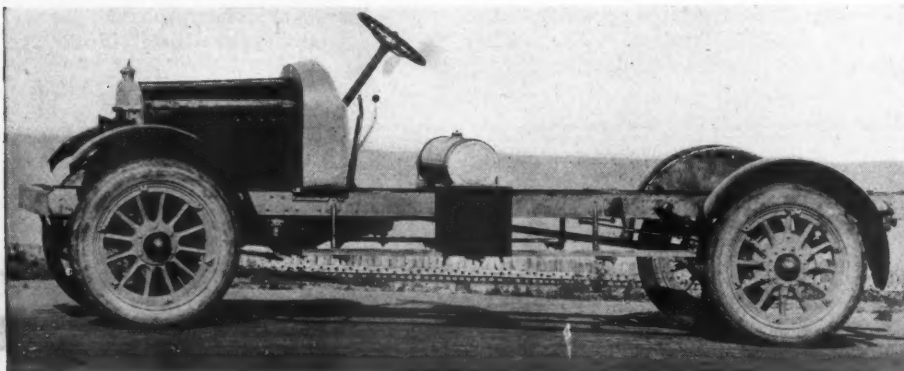
This job is powered by a 4-cylinder detachable head Herschell-Spillman engine of the L-head type, with a bore and stroke of  $3\frac{1}{2}$  in. x 5 in., respectively, and it is capable of developing 35 hp. The cylinders are cast in block with the upper half of the crank case. The pressure feed system of lubrication to the main crank shaft

taper roller bearings and wheel bearings throughout. The final gear reduction is 6.6:1.

The Thermo-Syphon system for cooling is employed, circulating the fluid through a tubular core, cast tank type radiator. Air is drawn through the radiator by a 16-in. fan having 4 blades.

The front axle is of the conventional drop-forged, I-beam section with heat-treated, load-carrying member and hardened steering pins and knuckles. The hub bearings are of the taper roller bearing type.

The frame is of rolled steel channel section 5 in. deep, 30 in. wide and 8 ft. 6 in.



Fully Equipped Winther "Delivery Special" Chassis

and cam shaft bearings is employed. The oil is forced through this system by a submerged, geared type pump. The engine is suspended from three points. Ignition is through a battery system with a Westinghouse distributor. Gasoline is fed from a 14-gal. tank, which is round and made of tern-plate, located under the driver's seat, to a Stromberg carburetor with a 1-in. opening, which can be controlled either by a hand lever on the steering column or by a foot accelerator.

From the engine the power is transmitted through a Warner multiple-disc, adjustable type clutch, with a clutch throwout bearing running in oil, to a Warner selective sliding type transmission mounted in unit with the engine. This transmission provides three speeds forward and one reverse and has a gear ratio of 3.24:1 in low and 4.05:1 in reverse. Power is carried to the internal-gear type rear-axle by a tubular drive-shaft, which is equipped with Peters universal joints, one on each end. This rear axle has a load carrying member, beveled gear differential and is equipped with

long measured from behind the driver's seat. The front bumper member is integral with the frame. This frame is carried by four semi-elliptic, alloy steel springs, bronze bushed throughout.

Both service and emergency brakes are provided, the service brakes are of the

external contracting type, contracting on drums 14 in. in diam. and 2 in. wide, mounted on the rear-wheels, and operated by foot pedal; the emergency brake, which is also of the external contracting type, operates on a drum 8 in. in diam. and 2 in. wide, mounted at the rear of the transmission and is controlled by a hand lever.

The steering gear is a Ross screw-and-split-nut type, mounted on the left-hand side. Mounted on a sector inside of the 18-in. wheel rim are located the spark and throttle control levers.

The wheels, which are of the artillery type, contain, 12 hickory spokes front and rear. The front spokes are  $1\frac{1}{2}$  in. thick and the rear  $1\frac{3}{4}$  in. These wheels are equipped with demountable rims and pneumatic cord tires measuring 35 x 5 rear and 34 x  $4\frac{1}{2}$  in front.

The starting system incorporates a Westinghouse starting motor with Bendix gear shift operating with gear teeth in rim of the flywheel. The button type of starting switch, which is operated by foot, is supplied.

The current required for the lighting system is furnished by a Westinghouse generator, which charges a Willard storage battery that is mounted on the running board. The current is controlled by a combination ignition and lighting switch, which, together with an ammeter, is mounted on the instrument board, thus permitting the driver to reach any position easily while operating the truck. The fuse block is mounted on the dash. The headlights are equipped with Warner-Patterson lenses and are mounted on the fender brackets. The dim or bright lights are controlled by a switch by means of a resistance coil mounted on the instrument board. Electric tail and dash lights are also supplied. All wiring is steel armored cable.

This job has a 135-in. wheelbase and 56-in. tread.

The standard equipment consists of one extra rim, tire irons, hand pump, full set of tools, jack, front bumper, front and rear fenders with full length running boards, Alemite lubricating system, Buell explosion whistle and Stewart-Warner speedometer mounted on the instrument board and driven by enclosed spiral gears at the rear of the transmission.

The special equipment includes a windshield, transmission driven tire pump, seat and bodies.

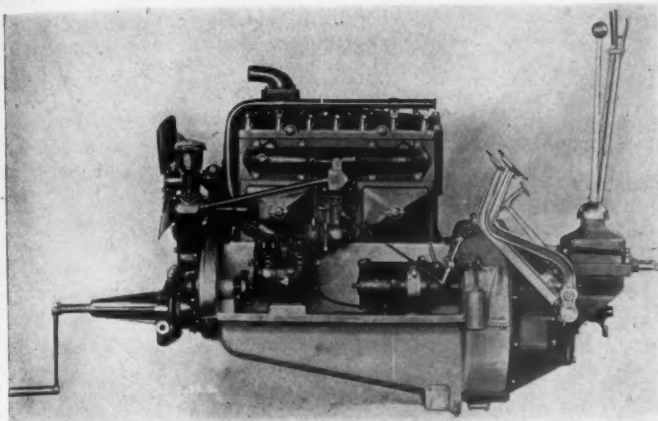
## New Pierce-Arrow Trucks Equipped With Dual-Valve Engines

**A**NNOUNCEMENT of an expanded line of motor trucks, powered by Dual Valve engines, is made by the Pierce-Arrow Motor Co., Buffalo, N. Y. The new line includes 5-ton,  $3\frac{1}{2}$ -ton and 2-ton trucks and a tractor unit, each equipped with double ignition and electric lights.

The Dual-Valve power plants, it is declared, will effect as great a forward stride in motor truck performance as did the introduction of the worm gear in 1910.

"The Dual-Valve engines equip the trucks with a pulling power superior to any demand," says Robert O. Patten, truck sales manager of the company. "Moreover, this power is obtained with an increase in economy; gasoline yields more miles per gallon."

The dual-valved engine, constructed on the principle of the Dual-Valve engine developed by Pierce-Arrow engineers so successfully in passenger car use, has been in process of design and test for more than



View of the New Pierce - Arrow Dual-Valve Engine, Clutch and Transmissions Assembly, Showing the Pierce-Arrow Delco Double Ignition System.

two years. Extended usage under actual working conditions has eliminated all guess-work as to its performance.

Strict adherence to the basic Pierce-Arrow engineering principles, the company states, insures that the present line retains the distinctive characteristics of reliability and durability. But with the refinement of design, the new trucks not only set new performance standards, but establish a record low level of repair and maintenance costs. This is achieved through an accessibility which permits

of quick, economical repairs, insuring a minimum of time lost in the service shop and a minimum of repair costs, according to the company's statement.

Modernized manufacturing methods combined with an expansion of factory facilities necessitated by efficient war production methods has enabled the company to enhance the quality upon which its truck's reputation has been built. More accurate machining, an even greater uniformity of product and improved methods of testing have achieved the result.

## Automotive Trailers

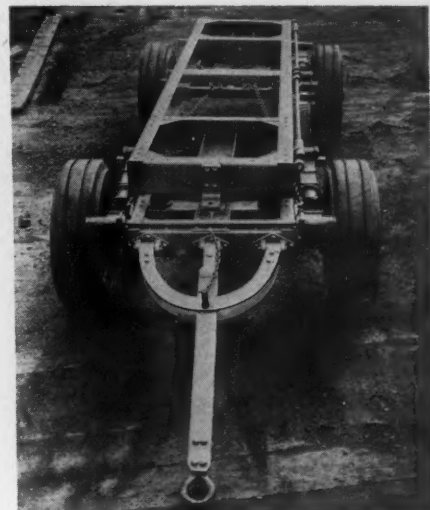
**T**HE Automotive Trailer Corporation, Springfield, Ill., are producers of various type of four- and two-wheel trailers in capacities ranging from 1 to 20 tons. The four-wheel reversible model is made in sizes of from 2 to 20 tons capacity.

Mounted at each end of the main frame in the heavy models is a complete roller-bearing, turntable, which permits either axle to be locked in a position perpendicular to the length of the frame while towing from the opposite end.

For use in backing up a worm gear device is provided, by which the trailer may be steered into position. The trailer may be guided from the end closest to the truck, which permits steering while observing exactly where to place the trailer. This worm gear steering device is a feature of the Automotive Trailer Corporation's trailer. By the use of this device four-wheel trailers can be built, double end construction, which the operator can back into any position without danger, steering either end at will or all four wheels if necessary. This device is installed only when specified. The reversible trailer will have a device for locking either truck in a central position.

General specifications are: Tires, Firestone, solid rubber, pressed on. Pneumatic tires furnished when specified on trailers up to and including 5 tons capacity at an additional charge. Wheels, steel, hubs cast integral, assuring perfect alignment. Bearings, Bock or Bower roller bearings on axle spindle, Bound Brook oilless bushings used on king pin, fifth-wheel roller, spring bolts, etc. Axle, Chrome Vanadium alloy steel, round, hammered forging, heat-treated, dead axle type, taper spindles. Spring Tuthill springs, semi-elliptic, chrome Manganese

steel, one end shackled, alloy steel heat-treated spring bolt, oilless bushing, both ends bushed, spring deflection under load 3 inches. Frame, pressed steel, hot riveted, reinforced cross member—dimensions variable to models. Tongue coupling, angle iron "V" construction, bracketed to sub-frame, hot riveted, electric furnace castings, load taken through spring rods to sub-frame and transmitted to main frame through roller bearing turntable and king pin. Universal joint type of tongue



Ten-Ton Automotive Trailer

This reversible trailer is equipped with a steering gear that facilitates backing maneuvers. The wheelbase is 106 in. and tread 72 in.

is also used on some models. Tow hook, standard government class "B".

Specifications, 2-3-ton models: tires, all, 36 in. x 4 in.; wheels, all, 36 in. x 4 in.; axle, all, 2 in. round; spring, all, 2½ in. x 48 in., 10 leaves; frame, length 144 in., width 36 in., depth 6 in., flange 2½ in.; wheelbase 88 in., tread 56 in. 5-7-ton models—tires, all 36 in. x 7 in.; wheels, all 36 in. x 8 in.; axle, all, 3 in. round; spring, all, 12 in. x 48 in.; 12 leaves; frame, length 168 in., width 36 in., depth 8 in., flange 3 in.; wheelbase 106 in.; tread 66 in. 10-15-ton model—tires, all, 36 in. x 10 in.; wheels, all 36 in. x 10 in.; axle 3½ in. round; spring, all, 4 in. x 48 in., 13 leaves; frame, length 168 in., width 36 in., depth 10 in., flange 3½ in.; wheelbase 106 in., tread 72 in. 20-ton model—tires, all 40 in. x 14 in.; wheels, all, 40 in. x 14 in.; axle, all, 4 in. round; spring all 4 in. x 48 in., 17 leaves; frame, length 168 in., width 36 in., depth 10 in., flange 3½ in.; wheelbase 106 in.; tread 72 in.

## Economy Steel Dump and Express Body

**T**HE Economy steel dump and express body, manufactured by the Providence Body Co., Providence, R. I., is built in two capacities, namely 35 and 54 cu. ft. It is primarily a two-purpose combination outfit with a simple worm and gear hoist on a steel body of light weight built to fit all makes of light truck chasses. This body is adaptable as an all-purpose body for the industrial plant, a carrier for small coal and building material deliveries, and as a general hauling unit to meet the requirements of the small contractor and farmer.

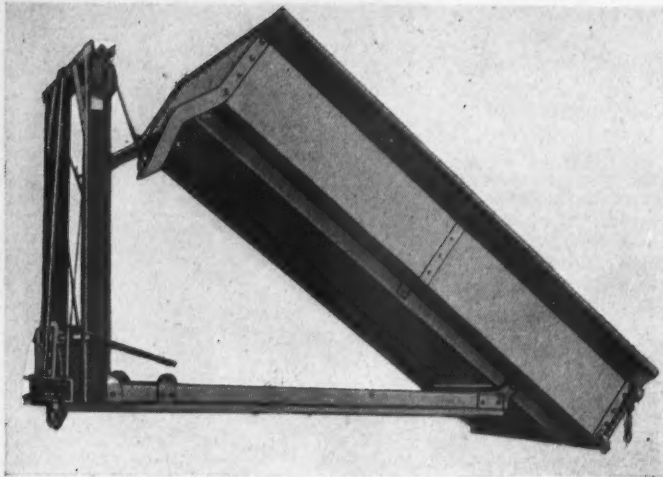
The hoist and body form one unit and are mounted on one frame. The sub-frame of the body is designed to fit the various width of all light truck chasses and is drilled ready to attach. Special attachments for mounting are furnished with each unit.

Dumping is accomplished by a worm and gear hand operated hoist of only two moving parts exclusive of the pulleys. The hoist takes up but nine inches space and is operated from either side of the truck. The worm and gear hold the load without the use of ratchets or other contrivances.

The reversible tail gate which can be hinged from top or bottom and the steel flares made integral with the sides of the body form a steel express body. The hoist in no way interferes with the express features and no change of any kind is necessary in using the dumping feature. The tail gate is equipped with a sliding scuttle door for discharging part loads.

The No. 1 body, which has a capacity of 35 cu. ft., is 7 ft. 6 in. long, 48 in. wide and 14 in. deep. The overall length is 101 in. The length of sub-frame is 76½ in. Hinge point 78 in. from back of





#### Economy Steel Dump and Express Body.

This body, which is adaptable as an all-purpose unit, is equipped with a simple worm and gear hoist.

seat and 22 in. from rear end. Weight 700 lb. Shipping weight, 800 lb.

The No. 2 body, which has a capacity of 54 cu. ft., is 8 ft. 6 in. long, 48 in. wide, and 19 in. deep. The overall length

is 113 in. The length of the sub-frame is 91½ in. Hinge point 91½ in. from back of seat, and 21½ in. from rear end. Weight, 865 lb., and the shipping weight, 1000 lb.

## New Columbian Electrically Welded Dump Body

**T**HE Columbian Steel Tank Co., Kansas City, Mo., but recently started in the manufacture of the Columbian all-welded dump-body and has since adopted the electric weld method as being the most favorable. This method of construction, which eliminates all rivets and bolts, not only makes a more substantial job, but it also practically makes the dump body with the under silling a one-piece unit.

The superiority of welding over riveting has been demonstrated for the past few years in the use of this method in the construction of tanks and now this company has adopted this method in the construction of dump bodies, which thorough tests has revealed to be the most superior method. It gives a nice clean and smooth surface on the inside of the body, which prevents portions of materials to be dumped from adhering to and around the rivet heads, facilitating instead

a clean and easy dump. Another feature is the fact that there are no rivets to play loose or to become broken thru vibration.

The rod that regulates the dumping end-gate is insured against possible damage as this rod is run underneath the surface of the body instead of along the outside of the body. This rod passes through all the cross sills which also permits it to retain a rigid position at all times, thus always insuring its proper functioning.

### Adjustable Trailer

The salient advantage found in the Van Briggles Adjustable Trailer, manufactured by the Van Briggles Motor Devices Co., Indianapolis, Ind., lies in the fact that the axle can be shifted backward or forward, until the wheels are brought to a perfect balancing position under the load. The axle can be shifted twenty inches from the center to the rear.

The shifting is done by a crank at the foot of the trailer bed, which turns two spiral screws running inside a steel housing, moving the axle, springs and wheels. The roller bearing spring shackles move easily in the steel track.

This trailer is built of oak and red gum, and has a stated capacity of 1500 lb. It has a collapsible stand that folds under the body when the trailer is in use, and supports the trailer when not attached to an automobile. A forty-five-inch extension tongue permits the hauling of timber. The wheel bearings are Timken roller

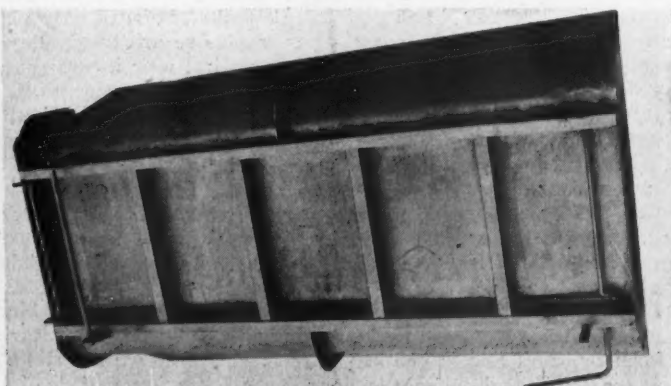


#### Van Briggles Adjustable Trailer

The rear axle of this semi-trailer can be shifted back or forth to a position best suited to balance this load

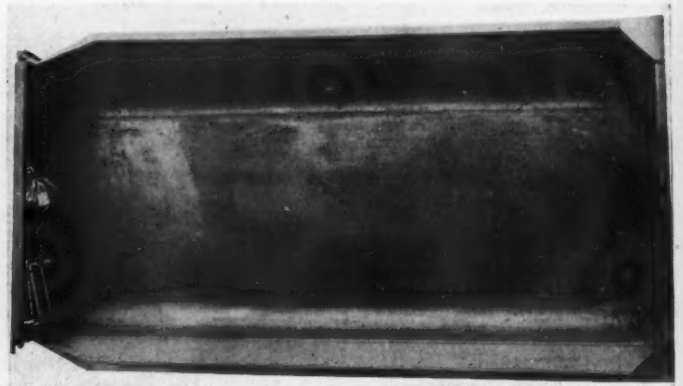
type, and are the same size on inner and outer hub. The axle is sturdily constructed of 1½ in. standard axle steel. The tires are 32 x 2 solid clincher type.

Specifications: Capacity, ¾-ton; body, 46 x 90 in.; springs, semi-elliptic; axle, 1½ round standard axle steel; bearings, Timken roller; wheels, heavy duty, 32 x 2; tires, 32 x 2 solid, 7000 mile guarantee; hitch, Brice automatic ball and socket; stand, automatic; shift, 20 in. from center to center; tongue, oak, 45-in. extension; prices, chassis and bed, \$185; stock rack body, \$15; flare board body, \$15; f.o.b. Indianapolis, Ind.



Showing How the Cross Sills and the Longitudinal Sills Are Welded Integral With the Body

Also note the end-gate regulating rod which passes through all the cross sills. This construction protects and holds the rod in a rigid position



Interior View of the Electrically Welded Columbian Dump Body, Showing the Smooth Bed Necessary in Making a Clean Dump

# Fageol Trucks Now Also Being Built in Cleveland

**T**HE Fageol Compound Truck which for the past three years has been built in Oakland, Calif., is now being manufactured also in Cleveland, Ohio, in order to meet the demand that has been coming to the California plant from truck buyers of the east and middle west. Fageol trucks are built in four sizes, 1½, 2½, 3½-4 and 5-6 tons capacity. Detailed specifications will be found in the specification table in this issue.

The Fageol organization has for several years been convinced that the motor

consumption per mile. The first speed forward in the Fageol is an extra low gear which gives the truck 91 per cent more pulling power.

The range of power and speed made possible by this transmission has been found especially desirable by truck owners of the Pacific coast where are found the most exacting traffic conditions in America. There, a successful motor truck must be able to haul a full load up 25 per cent to 30 per cent grades over all kinds of mountain road. It must be capable of withstanding the rapid transition from summer heat to freezing temperature to compensate for lowered efficiency due to high altitude—25 per cent at 7000 ft.—it must have a reserve of power far beyond sea level requirements.

In addition to its compound transmission, the Fageol embodies also ease of control and comfort for the driver. The truck is said to steer with unusual ease. All operating levers such as throttle, brake and gear-shaft, are most conveniently located and so constructed as to insure comfort when being manoeuvred.

The driver is relieved of the necessity of continuously oiling springs, etc., by the oil reservoir spring hangers which keep all of the springs on the truck lubricated. A very complete set of tools is conveniently located in a substantially built tool box. To provide for the driver's comfort a well upholstered form-fitting seat is furnished.

The Fageol Motors Company (of Ohio) as the new Cleveland company is known, is headed by F. R. Fageol, founder of the California company, who is largely responsible for the development of the truck as well as its success west of the Rockies, where it is one of the three or four big leaders in the trucking field. Mr. Fageol attributes much of his success as a truck manufacturer to the fact that for a number of years he was a distributor of cars and trucks. This experience, he declares, has been of inestimable help in enabling

him to build a truck which meets the demand of the truck user and consequently is easily handled by the dealer. This same experience has taught him the value of factory co-operation with the dealer.

Associated with Mr. Fageol is Calvin Eib, who will assume the position of vice-president in charge of sales for the Fageol Company (of Ohio). Mr. Fageol has brought with him from California, I. H. Crow, who has been the superintendent of machine shop production for the Oakland plant, Major S. E. Hutton, secretary and treasurer of the new company, and A. E.

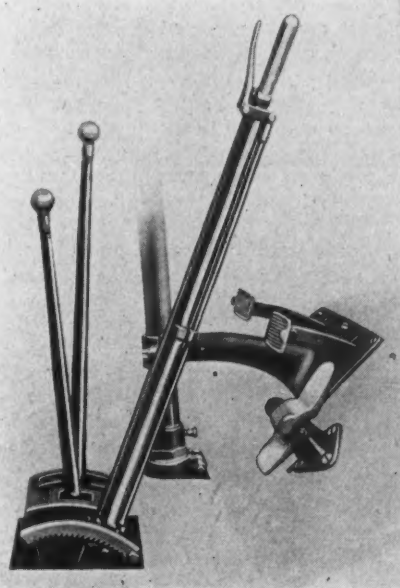


**F. R. Fageol**  
President of the Fageol Motors Co.

truck of the future must be capable of a wider range of operation. The following description tells their solution of the problem:

The 7-speed compound transmission which is largely responsible for Fageol success on the Pacific coast, gives the truck a range of power declared by its makers to be 91 per cent greater than is possible with the conventional 4-speed type of transmission, as well as 36 per cent more road speed, without in the least increasing the speed of the engine. The Fageol transmission, used exclusively in this truck, is in appearance quite the same as the 4-speed type, having exactly the same number of gears, shafts, etc. Yet the Fageol transmission provides five speeds forward and two reverse.

The extra speeds or gear ratios of the Fageol are obtained through a very simple device developed and perfected by F. R. Fageol, and the engineering department of the Fageol Company. This device, upon which patents are pending, makes it possible to run the countershaft of the ordinary transmission at two speeds instead of one. The fifth forward, or high, is an over-gear which, while not increasing the number of engine revolutions per minute, gives the truck 36 per cent more road speed, thus reducing the gas con-



**Showing the Relative Positions of the Control Levers, Foot Pedals and Steering Column on a Fageol**

Jurs, general superintendent of production. Webb Jay, of Vacuum Tank fame, is a director and vice-president of the company.



**Showing a Pneumatic-Equipped Fageol Truck, One of a Line of Four Sizes**



# Cutting Down Dead Time Handling Lumber With Motor Trucks

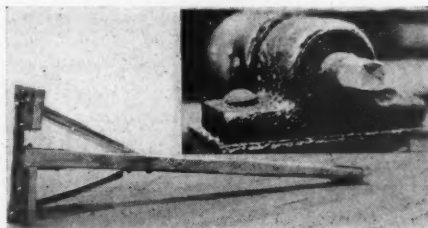
How Phoenix Lumber Company, of Spokane, Washington, Cut Loading and Unloading Time to Minimum. Roller Bearings in Lumber Rollers

ONE of the biggest factors in making motor trucks pay dividends to their owners is keeping them constantly on the move with pay loads; in other words, cutting down the dead time of loading and unloading to the minimum. Many otherwise successful dealers in motor trucks do not give this subject enough attention, forgetting that the salesman who is fortified with data on the quickest method of handling truck cargo in the particular line he is trying to sell a prospect, is the one who is going to put up the best selling talk. For this salesman, able to show the prospect where he can save hours of time in loading and unloading his truck, is multiplying the dividend showing of his truck to such an extent that the prospect is much more ready to purchase. The prospect is enabled to visualize profits, whereas with the ordinary selling talk, in which the prospect is given no tangible assistance in solving the cargo handling problems, he is very apt to think that loading and unloading would take so much time that he could not afford to make an investment of such size

that would be standing idle so many hours a day.

## Teach Efficient Methods

Handling large quantities of lumber with motor trucks may be a very expensive job, from the standpoint of loading and unloading, or it may be cheapened to an almost unbelievable extent. Strange

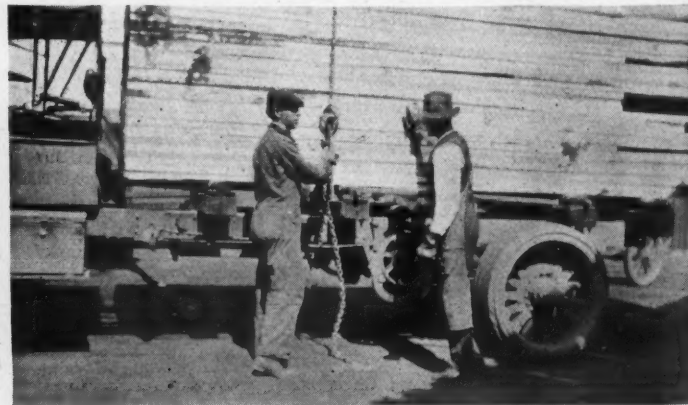
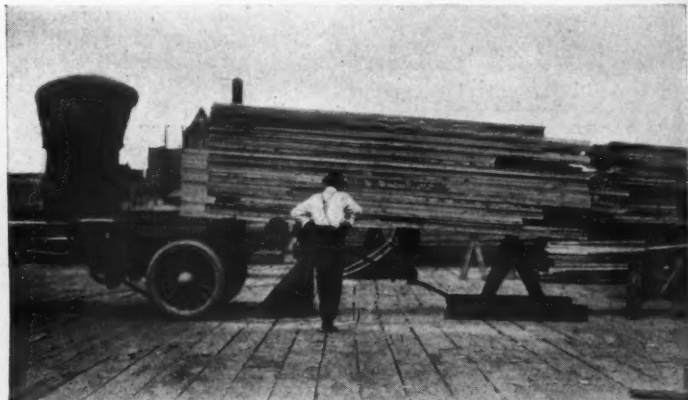
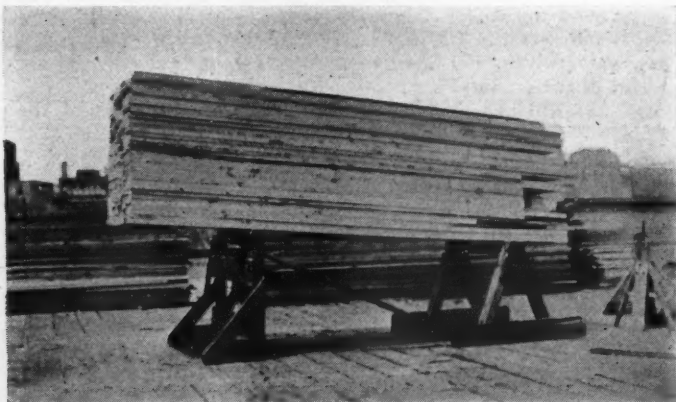


End of Roller, Fitted With Hyatt Roller Bearing

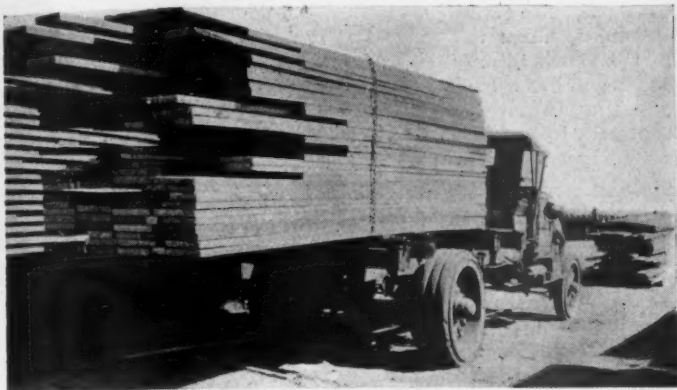
to say, some companies of considerable size are still using the old wagon methods of handling lumber, with their motor trucks, and are probably wondering why their motor trucks are not cheaper transportation units than their showing

makes them out to be. The dealer who sells a motor truck or trucks to a concern such as these and fails to post them on the most efficient known method of handling their product is negligent in his business methods and a derelict to his own best interests, as he is not "selling" trucks in a modern way, or a way that will bring repeat orders. Possibly he figures the owners will use more trucks, not knowing how to use them efficiently, but this is poor logic and will eventually work out to his business disadvantage.

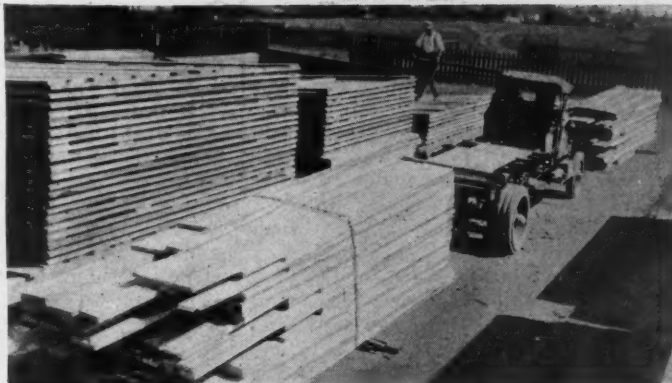
The accompanying pictures, showing how the Phoenix Lumber Co., of Spokane, Wash., handles large quantities of lumber at a minimum of loading and unloading expense, is of considerable interest and shows what a little thought will do in cutting down truck costs. The company maintains a sawmill in the heart of Spokane, on the banks of the Spokane river, and most of the lumber cut up at this mill is hauled several miles to a storage yard, where it is left to season in the open air. Two big Packard trucks are used, and the method of handling the lumber cuts the "dead" time of



Upper Left: Three Thousand Feet of Lumber Ready for Quick Loading; Upper Right: The Truck is Backed Under Front of Pile, Lifting It From Front Horse, Which is Then Removed; Lower Left: A Heavy Brace is Placed Back of the Load While the Truck Backs Under It; Lower Right: A Chain is Thrown Over the Load, Wrapped Once Around Each Side Frame, and Fastened



In Unloading the Lumber is Rolled Back Off the Truck Till It Balances at the Rear



After the Load Has Slid Off, Pushing the Truck Forward

Note boards holding lumber off ground near chain, so chain may be withdrawn

loading and unloading to a minimum. Three thousand feet of lumber is loaded on one of these trucks in about seven minutes, and is unloaded in even less time. The method used is as follows:

At the yard the lumber is piled on very heavy horses, the pile being made exactly as though it were being put on the truck. The front horse is about two inches lower than the top of the truck platform, and the rear horse is sufficiently lower than the top of the truck platform, so that the truck may be backed under forward end of the pile.

When the pile is complete, a board brace, shown in the photo, is placed between the top of the front horse and the foot of the rear. As the truck backs in the lumber is lifted from the front horse. The truck then stops, the horse is removed, and a heavy brace, shown in the pictures, is placed against the bottom boards of the rear of the pile, one of the lumber handlers standing on the end of the brace to keep it digging into the ground. This brace is faced with a 7-in. steel channel, in which are short steel spikes to keep it from slipping on lumber.

The truck is again backed till more than half of the load is on the body, which tilts the load up so that the rear horse may be removed. Backing the truck a

few feet more shoves the load into place against the rear of the cab.

A steel chain is then thrown over the load, a wrap of the chain is made around each side frame, and the ends are brought together and fastened. The load is then ready to move, this fastening having proved amply sufficient to keep the load in place.

#### Unloading Also Simple

Arrived at the destination of the load, the truck is backed to the point at which the load is desired, and the chain is unwrapped from the truck frames.

The driver then fits a crank to the square shaft of the rear roller, and turns same till the load is just balancing over the rear end. The chain is then locked tightly around the load to hold it together as it drops. The brake is let off the truck, and a couple of small boards are laid down on the ground in such a way that it will be held high enough from the ground that when the load drops the chain may be withdrawn.

The driver, using any convenient stick as a lever, tilts the front end of the load up so that the whole pile slides off the rear of the truck. As the rear end of the load strikes the ground the weight of the pile forces the truck forward until the pile clears the rear roller and falls

to the ground. The entire proceeding, from the time the truck backs into place till the chain has been removed, and the truck is ready to go back for another load, takes about five minutes, certainly a remarkable record for unloading 3,000 ft. of lumber.

The Phoenix Company, in the beginning, used ordinary rollers on the lumber trucks, but it was found that with the weight of the lumber on them they turned very hard, no matter how well they were lubricated. As an experiment the two rear rollers were fitted with Hyatt roller bearings and the experiment has proved very successful indeed. Previous to this equipment being installed the driver found it a very difficult task to roll the lumber back off the truck, but with the roller bearing roller this part of the operation became very much simplified and considerable time is now being saved in the course of a day.

A half-dozen sets of horses are used at the mill, so that there is always a load waiting for a truck when it drives in. Loading the truck so quickly at the mill and discharging the load rapidly at the yard has proved a big time saver to the company, and has made its investment in motor trucks a dividend payer from the start.

## There is Money in the Motor Bus Business Where the Proper Service is Given

**"Jim" Riley Has Proved That Motor Buses Can Get the Business From Slow Street Cars. Like All Successful Lines, He Suffers From the "Wild Catter." Regulation and Protection Needed**

**I**F motor bus lines are to be profitable and permanent, and give a maximum of good service to the public that depends upon them, there will have to come some definite licensing and regulation by state public utility boards, with protection from "wild cat" lines to the line that is best able to fulfill the requirements of public carrier. This is the opinion of "Jim" Riley, who for eighteen months has furnished regular scheduled motor bus service between North Wood River and Alton, Illinois, and who is now facing competition from the kind of bus

owners who, knowing his regular scheduled leaving time at various stops, cuts in just ahead of his busses and try to skim the cream of the business from him. In spite of this competition, Riley keeps right on sending his busses over the route according to schedule, and so well have the patrons along the line come to know his reliability and responsibility that they usually wait for his cars.

Backed up by mayors and public-spirited citizens of the towns he serves, Riley has gone before the Public Utilities Commission of Illinois three times in an effort

to secure what is called a "certificate of public convenience," and at this writing the commissioners thus far failed to award him such. He intends to keep right on fighting for it, nevertheless.

Riley maintains a twenty-minute service each way between the two ends of his route, which covers seven miles of good, bad and indifferent roads. An electric line gives hourly service between the two towns, but naturally the auto busses, running oftener and making the trip considerably quicker, get the majority of the business. The one-way fare is 25 cents, with



a fifteen-cent fare from East Alton to Alton, four miles. A commutation ticket good for 54 rides is sold for \$5, this being principally for the use of workmen who make the trip daily.

Four busses are necessary to keep up the regular schedule, and Riley has seven so that there is never a time when a Riley bus fails to show up on schedule time.

Of these busses, three are on Reo speed-wagon chassis, with light bodies, seating fourteen people in side seats.

Two Oldsmobile light truck chassis are also used, as are a  $\frac{3}{4}$ -ton and a two-ton White. The lighter White truck is in service between Alton, North Wood River and Edwardsville, a seventeen-mile trip, which it covers both ways five times a day on regular schedule. A fare of 55 cents is charged for this trip, or \$1.05 for the round trip. It is of interest to know that Riley has just completed a handsome body for a new  $\frac{3}{4}$ -ton White chassis, to be put on this run, the new body costing \$2,500 and embodying all the comforts of a modern street car. The seats in this bus will run crosswise.

Riley's Alton line gives service for 19 hours out of the 24, with regular busses every half hour after 9 P. M. This kind of service is appreciated by patrons.

In addition to the regular busses, extras are put on in the early morning from Alton, and in the late afternoon from North Wood River, running direct to several of the big manufacturing plants in the latter place, so that workmen who used to have to wait for street cars now have quick motor transportation to and

from their homes, giving them more time with their families and landing them at their work quicker and in a much pleasanter frame of mind than formerly, when they had to take what they could get in the way of accommodations from the street car company.

#### Trains His Own Drivers

Riley takes on none but licensed drivers, and gives them a thorough course of instruction before permitting them to drive his cars. As a result he has had, at this writing, but one accident, and this an unavoidable one. He pays them \$110 a month salary, and a bonus of 2 per cent of the gross returns from their bus, and finds that this keeps the men very well satisfied, and makes them look out for the interests of their employer keenly.

Some time ago Riley bought from a defunct company a two-ton White chassis with large, very fancy bus body, getting the outfit at a bargain. He has found, however, that this type of bus is not a money maker used in regular, quick bus service, but is all right as a special vehicle, or on a long run where trips are far enough apart that the bus is always assured of a load. It is the lighter, faster and cheaper chassis that makes the money in bus work, though this chassis must be strong and able to stand the gaff.

"The rear axle is the most important part of the machine in bus work," says Riley. "If the rear axle isn't built to stand the gaff it doesn't matter how good the rest of the truck is. That's where the big strain comes in bus work."



Detail of the Folding Step

All of Riley's bus bodies have folding doors, with lever connection to a folding step, so that when the driver closes the doors by swinging a lever, the outside step automatically folds up out of the way. This enables the passenger to get into the car easily, yet keeps the step out of the way while the bus is in motion.

#### Too Many License Fees

One of the things Riley is up against, which bus lines all over the country are having to face, is the matter of multiple license fees. For instance, he has to pay a state license of \$22 per bus, and in the city of Alton \$50 per bus as a city fee. To the Federal Government he has to pay \$20 per bus as a public carrier, and any time any of the little towns along the way want to plaster on a bus license fee Riley will have to pay it or cut out the town. However, he rightly thinks that three license fees, totaling \$92 per bus, is about enough for the present.

Riley is of the opinion that there is a brilliant future for the motor bus in this country, especially when roads are made better and the business is given the protection and regulation that must come with the passing of time. In spite of his handicaps he has purchased something like \$20,000 worth of equipment and plant from the earnings of his lines, as a result of giving the people along the routes what they want—frequent, dependable, courteous service.

Riley maintains his own garage and repair plant at North Wood River, and builds his own bus bodies now.

#### Truck Lines Increasing

Estimates give the United States not less than 5,000 truck express lines. New York State has more than 400 lines. The American Motor Freight Co., Sioux Falls, N. D., is incorporated for \$500,000. It includes 80 towns in Minnesota, Iowa and South Dakota. The New England Transportation Company, Boston, Mass., is said to have 150 trucks in service, on 12 routes, totaling more than 1,000 miles. The Patriot Motor Express Company, Wichita and Kansas City, Mo., is capitalized at \$1,000,000, and operates in Kansas, Nebraska and Missouri, and will use 250 trucks.



Upper Left: "Jim" Riley, Owner of the Successful Line Between Alton and North Wood River, Ill.; Upper Right: Big Body on Two-Ton Chassis, Not a Paying Investment in Short Run, Regular-Scheduled Service, Unless Traffic is Unusually Regular and Heavy; Lower: Three of the Riley Buses

# Don't Sell the Farmer the Truck, Sell Him on What the Truck Will Do for Him

Truck Sales Manager Sends Out a Series of Sales Letters to His Sub-Dealers That Make Them Sit Up and Start Things. Shows Them Where They Have Been on the Wrong Track

By A. V. COMINGS

MANY a "sales letter" goes out to the sub-dealer from the distributor's desk only to be tossed into the waste-basket, or to be carelessly read and thrown aside without giving it another thought. The average dealer holding a truck sales contract under a distributor needs something more than a trite form letter to jar him into the right kind of action, and it may be said for the dealers who hold contracts for selling Stewart and Reo trucks under the Sears Automobile Co., of Des Moines, Ia., that they get the "jarring" kind of letters with startling frequency, letters with real ideas in them. The result is they are selling a lot of trucks to farmers in Central Iowa, and are at the same time building up a solid foundation for bigger sales in future years.

Harter B. Hull is sales manager of the motor truck department of the Sears Company, and he constantly supplements his personal supervision of his country dealers with snappy, to-the-point sales letters that are not blazoned with glittering generalities, but that hit straight out from the shoulder with good advice and sales pep that helps his dealers to get real, honest-to-goodness truck orders from the farmers in their various territories. A recent series he has sent his sub-dealers has had to do almost exclusively with selling trucks to farmers. In these letters he has emphasized the sales point that in selling passenger cars, the salesman sells the vehicle. But when it comes to motor trucks, the thing to sell is what the vehicle will accomplish for the buyer. The first letter of the series follows:

## About Selling Trucks to Farmers

"Maybe you're ahead of us on this, but we're frank to admit that we have been asleep as to the proper ways to talk trucks to the big farm trade ready to listen—as soon as we can talk sense to them. Honestly, it seems a wonder how many trucks we've sold to farmers with as little



Show 'Em a Calendar, With Shaded Days for Rain and Bad Roads

real knowledge of how to do it, as we have had;—the fact is, the ones who have bought, surely sold themselves,—even with us confusing the matter with our catalog talk on the matter.

We believe we're awake now, and after a long time spent in studying the matter—with farmers, we believe we have some ideas that you will find fairly sound—and we'll pass them along. If there are flaws in

our reasoning, and there doubtless are a lot of them,—pick them to pieces and write us your ideas. Co-operation on this big subject will be the means of us getting the jump with our truck line—because we'll know while the other fellow is still shooting wild.

First—What's the matter with the way we've been talking trucks?—Say, did you ever have a book agent cut loose on you with a thirty-minute wind-storm about the deckle edges, quarter-leather binding, 80 pound linen paper, fourteen point type—and the rest of it, and forget to explain what the book was about and how it would be valuable to you from a standpoint of reading the thing?—Get the idea?

We've been talking three-point suspension, cast-tank radiators and force-feed lubrication, when the prospect wasn't clear sure any type of truck would save him any money or time.

## What's the Answer?

We've been talking specifications when what we really need to sell, in order to make a good many hundred truck sales in the next few years, is **TRANSPORTATION**.

What is transportation? Why, the ability of our power-wagon to transport or haul produce, grain, stock or freight, cheaper, quicker and better than it can be hauled by teams. If we can honestly show a saving in time and money, and we surely can if we use our heads and pencils—we'll have plenty of time to sell our own vehicle and its specifications then, for we will have gained the prospect's confidence. He'll know we've talked sense and will follow our judgment on the make and capacity of the truck to do his work,—for he'll think we know—and the other fellow has been guessing.

The minute we let the farm trade know we are transportation specialists (and with our knowledge of the business it's going to be easy to do)—then will we begin to establish ourselves as real truck merchants, selling not so much painted steel frame with a motor and rear axle, but service—or the ability of that machine to do away with the hired man on the farm, by saving days of time for every farmer to put into work on his place instead of wasting those days back of the double-tree.



A Farmer Likes to be Comfortable. Give Him a Warm Cab for Winter



1920		MAY					1920
Sun	Mon	Tue	Wed	Thu	Fri	Sat	
						1	
2	3	4	5	6	7	8	
9	10	11	12	13	14	15	
16	17	18	19	20	21	22	
23	24	25	26	27	28	29	
30	31						

This Calendar is Employed in Convincing the Prospect of the Advantages of Truckportation Over the Horse and Team Method

More later. Write us your ideas on selling trucks to farmers.

Yours for sales,  
SEARS AUTOMOBILE CO.  
By Harter B. Hull."

The second letter of the series has a concrete idea that ought to be worth a great many sales to any dealer selling trucks to farmers. Read this, for this idea of using the calendar is a mighty clever one, and will make sales:

#### More About Farm Truck Sales

"Not receiving many replies indicating we were on the wrong track in our letter the other day on this subject, we've encouragement to pass you some more ideas—not that you haven't them already, but that, like ourselves, you haven't taken time to put them on paper.

We've decided to sell, not just our fine specifications, but TRANSPORTATION—haven't we?—Fine! That was the stuff in the days we had to sell cars—stream-line bodies, deep upholstery—forty-two slots in the hood—and the rest. But it won't do now.

We know we've got to put a farm body on that truck chassis, take it to the farmer and say, "She's sound in wind and limb, and she'll do more darned work in a couple of hours than your team and wagon will in two days—and you'll save all that extra time—and I can prove it!" That's starting to sell transportation.

It's not "how much" use a farmer has for a truck—it's how few days he'll have to use the truck to haul the same number of tons it would require weeks to move by team.

If the team could work those extra days alone, it wouldn't be so bad—but, unfortunately, he has to spend all this time, too, guiding the critters!

Now, what about argument No. 1, —to the effect that:

"Trucks are coming—we'll all have to have 'em—when we get good roads!"

Shades of Pluvius! (whoever he was)—we'll all have forgotten who Charlie Chaplin was before any real system of paved roads is a reality in this State—even if they start now—which they're not doing. No use to fool ourselves on this.

Read the next page closely.

Look at this calendar—Let the shaded days show rain (let's make it awful) and let the dotted days show the days a team can haul when a truck can't (absurd again), and let the black days be the only time a truck can get on the roads this month.

Now, Bill Jones, farmer, has 600 bu. of wheat to move during May—he lives 7½ miles out—and says 2½ miles per hour is a good average with a team—six hours for a round trip—one whole day gone—and one 50 bu. load hauled. With twelve days' solid work in the twelve days he could haul—he just got the 600 bu. in.



Harter B. Hull

Motor truck sales manager Sears Automobile Co.,  
Des Moines, Iowa

All right!—Bring out the truck—15-mile round trip—one hour easy; Haul but six hours—six 50 bu. loads or 300 bu. per day—and in two days he's hauled his 600 bu. Ten days' time saved—and twenty-nine days he didn't have to feed, hitch and clean a stable.

We know and you know—and so will Bill Jones, farmer, when we show him—that he's foolish to keep that extra team or two over his actual requirements for plowing and cultivating—even if there are ten days

when his pneumatic-tired truck can't go—which is, of course, not the case, as we can prove to his full satisfaction.

Think it over—make a calendar on a sheet of paper—and try it out on the next prospect.—And, by the way, there are nearly two thousand of them with an average acreage of about 160 acres in your county.—Nine out of ten of our car owners are real prospects—and we are the fellows in closest touch with them.

It's too good a chance to find out whether we're salesmen or order takers—not to take advantage of. Isn't it worth a try—if it means a profit of several hundred dollars we'd not get otherwise?

Let's Go!!

SEARS AUTOMOBILE CO.

By H. B. Hull."

A letter headed "Start Something," followed these two, and in part was as follows:

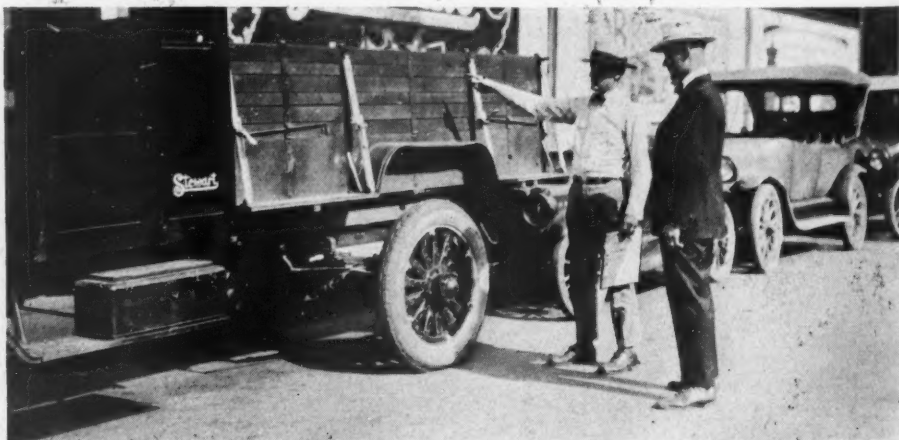
"Harvest will soon be here and thousands of bushels must be moved and moved quickly—with the greatest help shortage ever experienced—and with bumper crops evident.

"Everybody likes to do business with a 'live wire.' Here's your chance to fix it in your farmers' minds that you are the man.

"An Idea: (Tried and proven to work) Find a farmer with several hundred bushels to move, or a hundred hogs—preferably five to ten miles out; arrange to haul the entire lot and do it in a day. Let everyone in the county know how quickly you handled it, and get a signed statement from the farmer, telling how long it would have taken by team. Advertise the feat, and you'll have an argument which can't be beaten.—This is much better than single-haul demonstrations, which prove but little.

"Take our word and try this—we'll send one of our truck men over if you'll name the day.—This week is none too soon—arrange now!"

Another letter, in July, called atten-



Put a Combination Farm Body on for Demonstration Purposes

tion to the immediate market for Reo speed wagons for use with bus bodies, for hauling school children to the consolidated schools, of which there are many in Iowa. This "punching up" letter brought splendid results, for the sub-dealers got busy with the district school boards and corralled a lot of orders for

Reo chassis for this work. It was seasonal business, forced hard by the right kind of letters from the head office.

Mr. Hull has his eyes on the future at all times in managing the sales end of the Sears truck business, and does much of the thinking for many of his dealers when it comes to planning the sales cam-

paigns for different parts of the year. He has succeeded, through his enthusiasm and energy and willingness to help every dealer in the territory, in building up a splendid truck selling organization, and the results he is getting speaks volumes in favor of the excellence of his methods.

### Business Tonic Tabloids

1. Be cheerful, no matter what it costs, the first two hours of every day, and you'll be serene, capable and confident the rest of the time as a matter of course.

2. Know clearly and definitely what you want; then map out a sensible and sane campaign to that end, and remember to use pep, perseverance and persistence.

3. Don't be afraid to be alone sometimes and to think deeply, once your mind is cleared of trivial distractions. Great men are greater than their fellows in exact proportion as they think. Herd men—those who can only work and eat and play in a crowd—are always led by the big, strong fellow who knows how to think and who thinks often.

4. When you seek advice, as all of us must do sometimes, do not be weak and childish enough to state your case, so that it is evident that you are anxious to be advised a certain way. Give your would-be advisor the straight facts without stating your connections, and then listen to what the best judgment of the other decides is the part of wisdom. It's dead easy for folks to agree with us and very pleasant—but not always safe. Besides, if we want advice—what is the use of practically dictating what that advice shall be?

5. There is only one way to do business, and that is the right way.

6. Real man-strength, and mental, and spiritual muscle are only developed by meeting hard, trying tasks and overcoming them. When an individual or a nation seeks a life of ease, of soft jobs, and much leisure, deterioration and then decay set in.

7. To get the benefit of experience, medicine, exercise, money, or possession of any kind we must use those possessions. Use of the right kind, is paying the price of actual and beneficial enjoyment. We must be "doers of the word, and not hearers only."

8. The hungry man who sat down to rest, only to have a dozen luscious plums drop in his lap, had traveled far to reach the plum tree; he had resisted the many inclinations to make pleasant detours, and had rested only when he might do so with the plum branches overhead. Don't expect plums to fall into your lap if you stroll outside your own door and sit under a crab apple tree or a bramble bush.

9. Some men never succeed because they never learn to pyramid their efforts. They just scatter a little here and a little there. It doesn't pay!

10. Will power will take a man far. Will power plus health will carry him pleasantly. Will power plus health plus good judgment and vision will carry him safely and as rapidly as is consistent with safety.

### Further Developments in the International Harvester Company's Truck Program

It was announced recently that the International Harvester Co. is to erect at Fort Wayne, Ind., a large motor truck plant to increase its truck manufacturing schedule. A new truck to be known as the Model S Speed Truck, will shortly be added to the company's line. The big works at Springfield, O., will be turned over to the exclusive production of this new model. Although business in International motor trucks has increased 1500 per cent. since the year 1914, a sensational growth in itself, it is estimated that the development of this new model will double the company's production as soon as capacity can be reached.

The Model S International will be a 1500-lb. capacity truck, 115 in. wheelbase, equipped with 34 x 5 pneumatic truck cord tires and electric lights and starter. The list price of the chassis will be \$1500

f.o.b. the factory. The model will be assembled from approved standard units and will have an average speed of from 25 to 30 m.p.h.

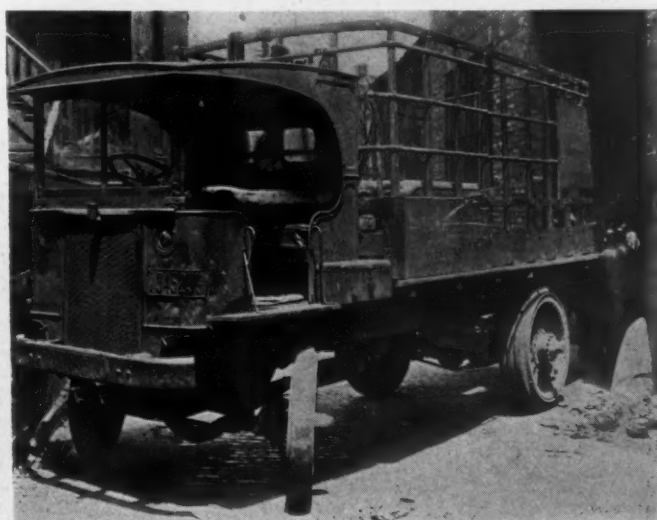
Springfield works is a large plant covering seventy acres of ground in the suburbs of Springfield, O. It consists of long, spacious buildings, some of them four stories high, favorably arranged for modern, progressive assembly. The workshop, for instance, for building bodies is a large structure four stories high and 403 ft. long. Railroad facilities are excellent both from the standpoint of incoming materials and of the destination of the product in the hands of International Harvester branch houses and International motor truck dealers and distributors.

The plant will be under the works management of Cyrus McCormick, Jr., who has had charge of International motor truck production since April, 1919, and who is an enthusiastic and energetic believer in the present and future of the motor truck as an American institution.

"The turning over of this great plant to the development of a new truck is not our doing alone," said Mr. McCormick. "We are compelled to do it in order to meet our obligations to the commercial and agricultural development of America. It is a case of developing a light truck for light, fast work. This is an age of speed. The people of America, whether they work in factories, in offices, or on the farms, are more and more reaching the point where they want immediate service on the things they buy."

This Three and a Half Ton Garford Truck Replaces Six Horses, and is Saving \$7,700, or Twice Its Original Cost, Every Year for a Chicago Company.

The National Oxygen Company, 14 East Harrison Street, Chicago, asserts that three two-horse teams couldn't do the work that is being done by its 3½-ton Garford truck. The National Company's truck leaves Clearing, Ill., a suburb, at 7 o'clock every morning with a load of 62 oxygen cylinders which weigh about 30 lb. each, making a 4-ton load. It averages 35 miles a day, covering three sides of Chicago. It carries a full load virtually all the time because empty tanks are picked up enroute for return to the plant. This operation with horses which would involve three teams, would cost \$15 a team, or \$45 a day. With the truck the job is handled at a cost of \$17.69 per day, an actual saving of \$27 a day or \$7,500 a year. The original cost of the truck was \$3,800, so that means it is paying for itself twice each year. This performance is another astounding example of increased profits and service possible by utilizing automotive means of transportation over the antiquated horse and team method.





# New Air Brake System for Motor Vehicles, Trailers and Semi-Trailers

**T**HE Lane Air Brake Co., San Francisco, is manufacturing an air brake system that has many advantages. It is adaptable to any motor vehicle, trailer or semi-trailer and its installation requires no changes in regular truck equipment, nor are the standard brakes affected. Not only is a smoother brake action said to be secured through this system than is possible with either the hand or foot brakes and, a maximum brake pressure of five or six times that possible with the ordinary brakes obtainable, but instantaneous release of pressure at all times is assured when desired. Perfect equalization prevents unequal brake pressure with freedom from dragging brakes. No lubrication is required at any point. There is no packing in the system and no adjustments are required. An automatically maintained pressure storage is provided requiring only one moving part.

The following is a detailed description of the special features of the Lane air brake. By referring to the accompanying illustrations, when reading, a comprehensive knowledge of the operation of this system and the relative positions of its various units, when installed on the vehicle, can be had.

## Accumulator Valve

This water-jacketed valve, containing only one moving part, is usually attached in the priming cock opening on any one cylinder of the engine and maintains automatically a constant, dependable pressure in the reservoir. A small quantity of air or spent gas is forced through the accumulator valve at each explosion stroke until the pressure in the reservoir balances the pressure in the cylinder. The

valve then remains closed until the reservoir pressure is reduced or excess engine pressure is generated.

The maximum tank pressure obtainable varies from 30 to 50 lb. per sq. in. when engine is idling to 150 to 175 lb. when engine is laboring.

About 20 to 30 revolutions of the engine are required to raise the tank pressure sufficiently high to correspond with the engine compression. After this pressure is attained no loss in engine efficiency can occur, and the effect on the engine is not appreciable even when the tank is empty.

When coasting down a long hill the engine may be shut off as the compression will generate ample pressure to properly control the brakes.

## "L-W" Brake Valve

The brake or control valve provides a means of smooth control and regulation of brake pressure necessitated by variations in loads, speed, grades and road surface. It provides a means of definitely applying any degree of pressure to the brakes, and of maintaining the required brake pressure without variation regardless of small leakage.

Mechanically, the valve is extremely simple, requiring no more attention or adjustment than any ordinary globe valve.

## Quick-Release Valve

This valve provides instant release of the brakes. It is standard equipment on trailers and is a recommended addition for stages and high-speed express trucks. Sudden release of pressure in the brake pipe automatically opens the valve and instantly exhausts the pressure.

The instant response of the brakes to the slightest increase or decrease in pressure is secured by the action of a rubber diaphragm with heavy canvas insertion. The diaphragm cases are of bronze.

The assembly may be mounted on the frame cross-member or on the rear axle. Rear axle installation absolutely eliminates any effect on the brakes of spring action or torque and renders the brakes on a Hotchkiss-drive truck uniform in operation with full or no-load or even with a broken rear spring.

Type "A" Diaphragms have an effective area of 10 sq. in. and a stroke of 1/4 in.

Type "B" Diaphragms have an effective area of 20 sq. in. and a stroke of 2/4 in.

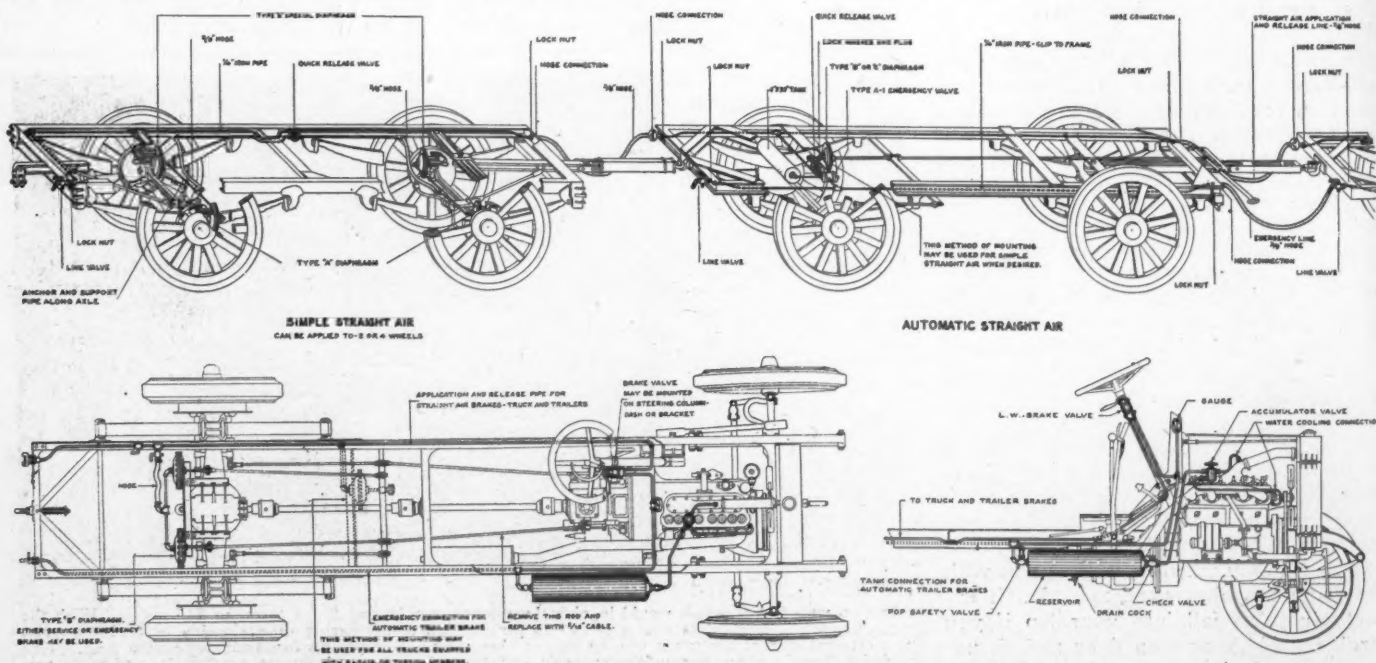
Type "C" Diaphragms have an effective area of 40 sq. in. and a stroke of 3/4 in.

Type "B" Diaphragms are always furnished as standard equipment.

Two Type "B" Diaphragms, the usual requirement, operating under 30 lb. per sq. in. brake pressure, will transmit 800 lb. to the brakes at a point where 100 lb. pulled on the ordinary hand lever will transmit only 500 lb. With emergency pressure operating under 70 lb. per sq. in. 2800 lb. is transmitted to the brakes at the same point. Any degree of pressure below 70 lb. is obtainable, but the brake valve will not permit any pressure in excess of 70 lb. to flow to the brake regardless of the tank pressure, which may be over 150 lb. per sq. in.

## Installation and Operation

The system may be installed by any ordinary mechanic. The tools required are a breast drill, screw driver, vise and wrenches. No holes over 3/8 in. are re-



These Self-Explaining Illustrations Show Clearly How the Lane Air Brake System is Laid Out in Both Trucks and Trailers

quired except in the brackets. No changes in the regular truck equipment are required except the removal of one priming cock and the replacement of one brake rod with 5-16 in. cable.

The only operation duties are the draining of the reservoir once each week and the taking up of brakes at infrequent intervals. Brake adjustment for wear of lining need be only once during the life of the ordinary brake lining. Further than this the operation consists in moving the brake lever to apply and release the brakes. No attention is required for the maintenance of sufficient brake pressure. Automatically maintained, with no attention, lubrication or adjustments.

The standard truck equipment consists of the following: Air pressure accumulator; air reservoir, or storage tank, with auxiliary check valve, drain cock, and pop safety valve; low brake valve; Lane diaphragm assembly with mounting; gage, valves, copper tubing, hose, couplings and all pipe, fittings and brackets.

The standard trailer or semi-trailer equipment consists of the following: Lane diaphragm assembly with mounting; quick-release valve; hose, couplings, pipe, fittings, valves and brackets.

The above equipment provides for a simple, straight air system. For automatic emergency, straight air trailer brakes the following equipment is required:

Emergency valve; auxiliary reservoir; brackets, fittings and connections. Automatic emergency trailer brakes require an additional hose connection between the main reservoir and the emergency valve on the trailer.

When more than six wheels are to be braked the installation of an air compressor is advisable. This may be provided with automatic or manually operated clutch. For severe mountain hauling a water cooling system is provided for cooling the brakes. This is automatic in operation, heavy braking pressure opening an air connection to the water tanks. Water is applied only when the brakes are in use.

## System Employed by a Central Illinois Concern in Distributing Oil and Gasoline

**M**URRAY & Medbery, the pioneer firm of automobile distributors of Bloomington, Ill., now handle trucks and accessories only, and also carry a line of oil. Representing the Texaco Co. the firm has built up a tremendous business in Central Illinois and now operates with a fleet of ten Oneida and Ford trucks, ranging from one to two-ton capacity. The Texaco Co. is one of the independent concerns which are rivals of the Standard Oil Co. Commencing in a small way to distribute oil, the Murray-Medbery Co. has gradually enlarged its truck fleet and plans still further enlargement and with an ever widening territory. So far as known, this is the only firm handling motor vehicles in Illinois, which has taken on the side line of oil and gasoline for wholesale distribution. The success of the Murray-Medbery firm is a suggestion to truck or automobile dealers of other sections. In the operation of a fleet of delivery trucks there is a big advantage in the availability of a garage and repair shop and thus keeping inspection and maintenance as important factors in reliable and economical operation.

Three trucks of the Ford type are of one-ton capacity and carry tanks of 300 gal. Seven trucks of the Oneida type are of two-ton capacity and carry tanks ranging from 550 to 720 gal. The heavier type are utilized for the longest trips, while the lighter are placed in the city and suburban deliveries.

Testing out solid and pneumatic tires at the outset, the firm has decided in favor of pneumatics, discarding solid tires.

Each truck is equipped with a weather cab, which thoroughly protects the driver from rain and cold weather. The Murray-Medbery trucks operate twelve months out of the year, even over the miserable roads of Central Illinois.

Regularity of operation and ability to fill orders promptly and regardless of road and weather conditions, are important factors in building up an oil business and overcoming competition. The Murray-Medbery Company accomplishes this by employing first-class drivers, most of whom are motor mechanics, and capable of making ordinary adjustment and repairs to the machine they drive. They are carefully coached and instructed by J. B. Kelly, the plant superintendent, and who personally looks after the inspection and overhauling of each truck. Every evening, in addition to other attention, the springs of each truck are thoroughly oiled. This has a tendency to increase flexibility and eliminate breakage. One of the principal sources of trouble in the past was due to broken springs. Since the application of oil this trouble has become negligible.

All drivers are paid a fixed weekly salary, regardless of the number of trips or gallons of oil handled. In addition, they are allowed a commission upon all orders they secure. This plan has worked out successfully and has enabled some of the drivers to increase their weekly remuneration all the way from one-third to one-half of their salary. The drivers are salesmen for the firm and the commission is an incentive to get over the route in the shortest possible time and

thus enable them to dig up new business and increase the circle of patrons.

The oil department of the Murray-Medbery firm is operated under the name of the Corn Belt Oil Co. So rapidly has the business grown that branches have been opened at McLean, ten miles south of Bloomington, and at Minier, ten miles west of Bloomington. Other branches are contemplated in towns to the east and north of Bloomington.

The farmer who does not own an automobile, tractor and truck, is becoming the exception in Central Illinois. With three or more motor vehicles upon the farm the man who tills the soil becomes a heavy consumer of gasoline, kerosene and lubricants. To take care of the oil needs of the progressive farmer is the object of the Murray-Medbery Company and they appear to fill the long felt want of tradition. Their business is unique and appears to be a winner.

The plant where the trucks are housed and serviced, where the truck salesroom and accessory department are located, is at 411 W. Washington Street, Bloomington. There is a frontage of 120 ft. and a depth of 150 ft. The two stories make the establishment one of the largest of the kind in Central Illinois. There has been a remarkable metamorphosis since the firm first took on the agency of the Overland car twelve years ago. Already one of the leading distributors of oil in Central Illinois, the ramifications of the firm will be vastly increased with the coming of the trunk line system of hard roads, promised soon in Central Illinois, as a result of the \$60,000,000 bond issue.



This Large Fleet Employed by Murray & Medbery Cover Central Illinois, in Distributing Oils





## SERVICE AND REPAIR DEPARTMENTS



Conducted by C. P. SHATTUCK

### Maintaining a Stable Dealers' Representation\*

**Embryo Dealers Lack Knowledge of Merchandising, Maintaining and Servicing Motor Trucks. Need for More Preliminary Educational Work and Periodic Advice and Encouragement Among Dealers From the Manufacturers**

**I**N a recent article in which service policies were discussed by the writer attention was directed to the small or isolated type of dealer. Statement was made that in the majority of instances coming under the observation of the writer the small dealer, particularly in the undeveloped territory, was sadly neglected both by the distributor and the manufacturer.

Several months have elapsed since the publication of the article referred to and in the mean time meetings and conventions have been held at which effort has been made to solve the service problems. While credit must be given for that which has been accomplished by these meetings the isolated type of truck dealers ask the pertinent question: "WHAT HAS BEEN DONE TO AID US SELL AND MAINTAIN TRUCKS?"

There are hundreds, yes, thousands of new young dealers who have invested their all in the truck industry and who are striving to become big dealers. In these troublesome times, when the banks are curtailing credit, the small dealer is in need of aid—not necessarily financial aid—but assistance from his distributor, and from the manufacturer.

#### Young Dealer Needs Aid

Factory sales managers complain that it is difficult to obtain good dealer representation. Statistics show that there is a big dealer turnover annually. And there are successes. Failures are ascribed to lack of capital, long time payments, trade-ins, lack of service, etc., and while these are factors the writer hazards the opinion that they are also effects; that, if we dig to the root of the matter, it will be found **THAT THE YOUNG DEALER'S FEET WERE NOT STARTED IN THE RIGHT PATH.**

Talks with dozens of dealers of the sub or associate type prove the contention made in my first article that in their anxiety to obtain representation, to spread

distribution over a wide territory, the distributor's representative or wholesaler does not tell his prospect all of the story dealing with the merchandising and maintaining motor trucks. This applies to the isolated type of new dealer, and in some instances to other territory.

The dealers with whom the writer has talked say that the wholesaler painted in glowing terms the wonderful possibilities in selling trucks, the potentiality of the market, and, having enthused the prospect and secured his signature, considers the operation complete in so far as the distributor is concerned. In other words, having sold a truck the distributor has reduced the number of chasses he has contracted for by one, and with a number of such "representation" the total is further reduced.

#### What Happened to Brown

Now let us follow the career of one of these "representative" dealers, whom we will call Brown. He pays for his chassis, the demonstrator, and perhaps he will fit a standard type of body. An office or show room is opened. Printed matter is, of course, supplied, and, perhaps, suggestions for advertising in the newspaper of the town. And there is much printed material explaining the superiority of the truck, mechanical data, etc. And when the sign painter comes and creates an artistic design on the show room window the young truck dealer is ready to go out and make the name of his truck a household word among the users of horse-drawn equipment in his territory.

In the meantime another distributor locates a "representative" in the town. And it is not unlikely that a third or fourth make will be represented; in fact, it is not uncommon to find six or more representatives in a town of less than 9,000 population. Not all of these representatives will open a show room. Some will be what the trade terms the "office in their hat" type. Others will be a type

wishing to purchase a truck for their own use and take on an agency to secure the discount. The writer has run into dealer representation that when investigated proved to be a clerk in a furniture store. Very often the trail has led to a private dwelling where the wife of the man informed the writer that her husband would be home from work at six.

Now Brown is not acquainted with these representatives, his competitors, as yet; but, wait, he's going to be. Several days, perhaps a few weeks, elapse before Brown is ready to call on his first prospect with his truck. Brown gets to his prospect easily because he knows him. Probably it is a case of Bill and Jim. The prospect looks the truck over critically, although it is very possible he does not understand the difference between a worm drive or an internal gear.

#### Prospect Interested in Price

The prospect is interested in a truck; has about made up his mind to buy one. So Brown talks truck; tells what a fine machine it is, the great factory producing it, how much better it is than horses, etc. The usual glowing tribute to the design. Brown leaves the prospect with the latter loaded up with literature and goes home convinced he has the prospect hooked. Of course, the price has been asked. The small town buyer is always interested in the cost of what he buys.

A few days later Brown, armed with a contract and a fountain pen, calls on his prospect. But Brown isn't going to use the pen, for in the meantime the "office" type of dealer has called. True, he hasn't any truck to show the prospect, but he has photos and the usual stuff. Possibly one of the trucks the "office dealer" represents is in service in the town. If so, all the better for the "office dealer" and all the worse for Brown, if Brown has taken on a line new to the burg.

Now, Brown's truck or rather chassis lists at \$1350. His rival's is listed at \$1250. Now the prospect begins to argue

\*Editor's Note.—This is the second article of a serial on service. The third will appear in an early issue.

something like this. "Hum. Bill Brown's truck will cost me \$1350, and Smith's, who says his truck has the same parts as Bill's, costs \$100 less. Now, I like Bill's truck, but why should I pay \$100 more? Guess I will sleep on it a while."

#### Brown Won't Cut Price So—

But the competition gets keener, for a third dealer, this time another recently appointed sub-dealer, gets into action. He is selling a truck having practically the same units as Brown's, and the list price is \$1300. He tells his story to the prospect.

Now, the prospect being solicited so frequently sits back and waits for "inducements." As has been previously stated, the small town prospect is a good buyer. When Brown calls and tries to close the prospect hints that he can do better with the dealer whose truck lists at \$1250. But Brown has determined he will not cut his price and tries to point out where his truck is worth \$100 more than his rival's.

But, after playing one dealer against another the prospect buys from a fourth agent, the "office in his hat" type. This agent is a clerk in a furniture store. A bright young man not averse to making a dollar on the side, and, besides, he is well acquainted around town. Through a traveling salesman he heard that a dealer in a city about 50 miles distant was looking for an agent in the town, so the young man took a day off and called on the distributor. The result of the call was that the furniture clerk left armed with literature and with the understanding he was to receive 5 per cent on all leads he dug up that resulted in a sale. He was promised a greater per cent on an actual sale, but in so far as the writer was able to learn the young man never made a direct sale. But before proceeding further it should be mentioned that this story deals with a small town of about 9,000 population in New England and that the facts were unearthed by talks with the persons mentioned.

#### Cuts Price by Trading-in

Now when this young man learned that there was a prospect for a truck he called on him, and showed photos and literature. When price was mentioned and the prospect played the other dealers against this young man, he remarked that the dealer he represented did not cut prices, but had the prospect an old car to trade in? The prospect had.

To make a long story short the young man phoned his dealer, who ran down, looked at the old car, made a good allowance, and closed the contract. What the young man received was a check for \$25, which he considered a good day's work when it was explained to him that the margin of profit was small after the old car was fixed up and sold.

Now this young man is, so they say, doing excellent scout work (for that is what he is doing) for his dealer. The truck he talks predominates in the town. But what about Brown? His expenses are working 24 hours the day. A pecu-

lar feature about Brown is that he made it a hard and fast rule not to cut prices in any form when he started in to merchandise trucks. His competitors are cutting, but not Brown, so up to within a few weeks ago Brown had not sold a truck, although he has been plugging away for over 18 months. He would have been bankrupt had it not been for selling passenger cars, equipment and supplies, and for the fact that he opened a first-class repair shop.

#### Distributor Forgets Brown

The point the writer wishes to establish is that Brown was appointed by a Boston distributor who has a very large territory. Brown went to Boston, got his demonstrator and drove home. He was supplied with the usual literature, and later received a copy of sales ideas for which he paid cash. Now, according to Brown, he has not received a call from the distributor nor any of his factory representatives for that matter since he bought his demonstrator.

"What gets my goat," he said in discussing his problems with the writer, "is why the fact that I did not order a second truck in 18 months does not wake up the distributor or his sales manager. Whenever I wrote about any selling angle I received a form letter. Never a peep or a question why I was not moving trucks. Neither do I ever hear anything from the factory.

#### Passenger Car vs. Truck

"It is quite different from the selling of passenger cars, the attention you receive from the factory. Take the line I represent. Every little while a factory representative calls on me, looks my place over, and sits down and goes over my problems with me. He is there to give me aid and he does it. It makes a dealer feel good to know that the factory takes some interest even in the little fellows who are selling their line and keeping their cars running and the users satisfied. If I desire any information I get action.

"Why should it be different in the truck industry? I'll wager that the sales manager of the factory making the truck I have never heard of me and that either he doesn't care a cuss or else he does not care how his trucks are sold as long as his distributor in Boston gets rid of his lot. Why shouldn't the factory know why I have failed to buy but one truck in 18 months even if the distributor isn't interested? And why shouldn't the distributor have interest enough to learn why it is I am not selling trucks when my competitors are?

"I'd like about 30 minutes' talk with the head of the factory that makes my truck. I believe it the best truck made and that there is a big future for trucks, else I would never have stuck as long as I have. Of course, I could sell trucks if I would cut price, either direct or by taking in old cars and junk it, but that I will not do. I figure that a certain amount of profit made in selling a truck must be put to one side for service, overhead, sales and advertising. And I can-

not see any profit in giving the customer my profit.

"The small dealer is up against it. He has to meet all kinds of competition and without any help from his factory or distributor. And it is bad in the small places, for we have too many representatives who are satisfied with a small commission. Look at the way the dealers switch each season even in this town. Gosh, I sure would like a talk with the factory head, for I don't believe he knows what is going on among us small fellows."

Brown said much more during his discussion of truck selling with the writer, who quotes the case as one of many that have come to his attention. Unfortunately all small dealers are not as determined as is Brown that eventually he is going to sell a large number of trucks when he educates the truck prospects of the town that he is selling a good truck; that he must make a profit to render service that satisfies.

#### Has a Stable Policy

Brown's policies are sound and eventually will win out against the cut price methods, for the dealers or representatives of the class who sell and do not and cannot service cannot prosper. In time the owner of the truck sold by inducements discovers that waiting for parts and having repairs made by those not efficient or acquainted with the truck is costly experience.

It has taken Brown a long time to learn how to cope with the small town problems, and he has not solved them all by any means. But he has learned that rendering service that satisfies is a great asset, the best advertising he can do. He made his first sale the other day. It was made to a business house who owned a truck sold by the "office in the hat type" of dealer who could not keep the truck on the road. And Brown took that truck in as part payment, but at the actual market value. Brown talked service, proved his service, and against such sales talk the business man has no comeback.

#### Who is to Blame?

But there are hundreds of dealers who have not been able to stick it out as has Brown, with the result that there is a big turnover every year and hundreds of failures recorded. And who is at fault? Is it the factory that appoints a distributor or the latter? Or is it allotting too great a territory?

In Brown's case it was all three. The distributor never bothered his head, according to Brown, and evidently the factory was satisfied with the distributor. And during a recent trip among the truck factories the writer heard more than one sales manager bemoan the fact that good dealers were hard to obtain and that the turnover was tremendous!

Statement is made that the dealer who cuts price and fails is to blame for his downfall. Some are, but there are many who would have succeeded had their feet been started along the right path, the road that leads to successful and profitable merchandising of motor high-



way transportation. Too many distributors or their representatives are not honest enough with the prospective young dealer on the start. And too many neglect him after he has started.

#### Need of Personal Contact

What is needed is a closer personal contact between the distributor and the dealer and a closer personal contact between the factory and the distributor and dealer. Some manufacturers are practicing the plan of having capable representatives call on their dealers and sitting down on the backdoor step and listening to their troubles. And these manufacturers are getting some results for their trouble.

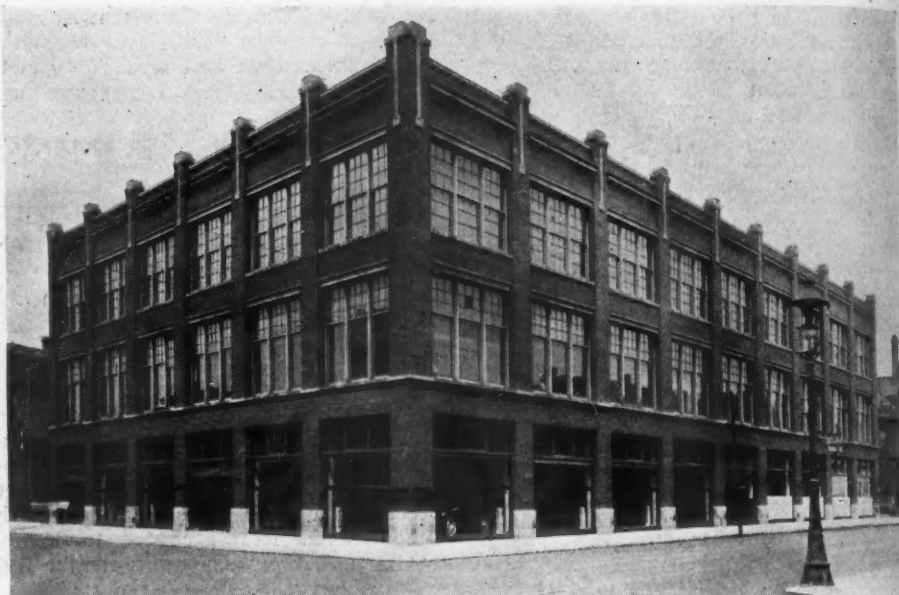
The factory needs to check up its distributors more closely and in turn the distributors should check the dealers. And factory sales managers should always have the latch string out to even the smallest dealer and without the latter fearing that any complaints he makes will result in the distributor chopping off his head. What is also needed is for all concerned to realize that the selling of trucks and servicing of them has got to get down to a sound stable basis, that allowing the distributor to appoint an "agent" because he will buy one or more trucks and then go out and cut the price, is not sound business for two things will occur. First, the agent of the price cutting trend will go out of business, and second, the lack of service will so advertise the truck that it will be difficult to get a real dealer to take it over, and prospects to buy.

#### Must Start Dealer Right

Exceptions probably will be taken to these statements, but take a list of dealers for 1919 and check against a list for 1920 and note the percentage of changes in dealer representation. And much of the cause is due to the fact that a representative is mistaken for a real dealer and that effort was not made to start the dealer right, and to see that he avoids the many pitfalls in the merchandising of motor highway transportation.

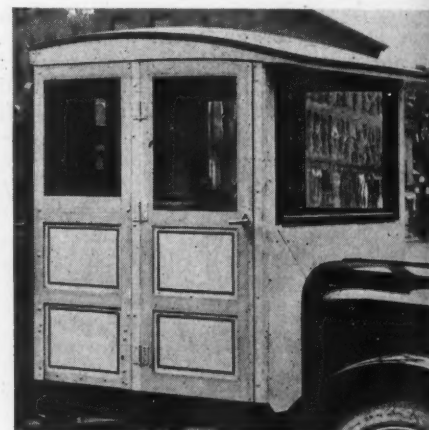
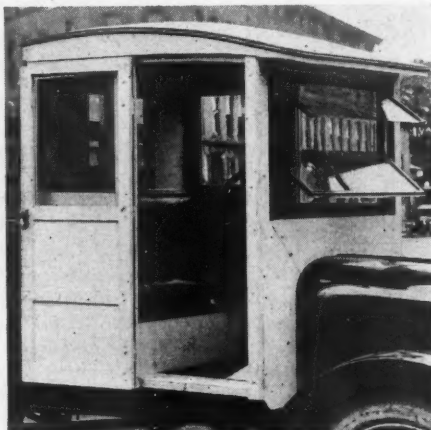
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#### Another Example of a Large Modern Service Station

The above is the new Service Department of the Dashiell Motor Co., Wabash Avenue at 26th Street. This very commodious building has a frontage on 26th Street of 193 feet and on Wabash Avenue 120 feet, three stories high, giving a total of over 70,000 square feet, all of which is devoted to the servicing of Dodge Brothers motor vehicles. It is most complete in every detail. On the first floor is the Receiving Department, Customers' Waiting Room, Service Department Offices, and shop for minor repairs and adjustments. On the second floor is a large modern Parts Stock Room, also, a Customers' Waiting Room. The balance of the building is devoted to the repairing of cars. In addition to this establishment there is a chain of twenty-seven (27) carefully selected Service Stations located in the suburbs and outlying districts, all of which are operated under the same general policy as the main Service Department.



#### Views of the New Vestibule Cab for a Ford One-Ton Truck, With Which the H. H. Babcock Co., Watertown, New York, is Going Into Production on a Large Scale

The production of this new cab was started in light of an urgent need for a popular priced enclosed cab for the Ford truck. This cab incorporates all the distinctive Babcock features of construction, and is built to give the highest degree of service. Maximum strength and rigidity is secured by a patented steel construction, without raising the weight of the complete product over 150 lbs. The double-ventilating windshield, as may be seen from the accompanying illustration, is fitted in a metal frame that is built-in as a unit, and both lights ventilate in and out. The vestibule doors swing clear back flat against the side of the cab; they can, however, be fastened partially open for ventilating purposes if desired. The doors can be readily removed in warm weather. The rear window can be raised, and is secured in an open position by thumb screws, one on each side, preventing rattling. The left window, which is opposite the driver's seat swings up in the inside and is secured to the top roof. The door and cab windows have been designed to secure clear vision for drivers. The cab is equipped with spring cushions and full width lazy back, upholstered in imitation leather.

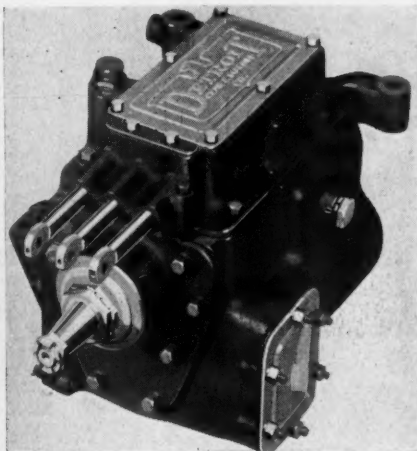
#### Motor Bus Regulation

The Federal Electric Railways Commission has reported to President Wilson sweeping measures to curb the operation of motor vehicles, and thereby help the electric lines facing bankruptcy. The commission points out "the untrammelled freedom from taxation, maintenance of highways and financial responsibility for accidents" which the motor operators enjoy. The commission, however, states that "it is not deemed consonant with the theory of American institutions and government

that the free movement of private citizens by their own means of locomotion should be restricted in order to compel them to make use of public vehicles, whether the latter be operated by private agencies or directly by the government." The commission believes that all that can properly be done by the government is to compel private vehicles using public highways to pay taxes proportionate to the burdens they place upon the highways as compared with the burdens placed upon the highways by the street cars.

# Repairing and Adjusting the Model H, Detroit Gear & Machine Company's Amidships Gear Set

**T**HE following are the factory methods of the Detroit Gear & Machine Co., Detroit, Mich., for disassembling, replacing parts, reassembling and adjusting the Model H four-speed amidships transmission made by this company. The directions are those for the four-point type and will apply to the three-point, which differs in that it has a detachable plate at its front end, in which is carried the drive gear and bearing assembly, and a detachable plate at the rear, which has the support arms of the transmission. Accompanying illustrations show the front ends of the four and three-point types, as well as the various steps in the disassembly of the four-point type, with which this article deals.



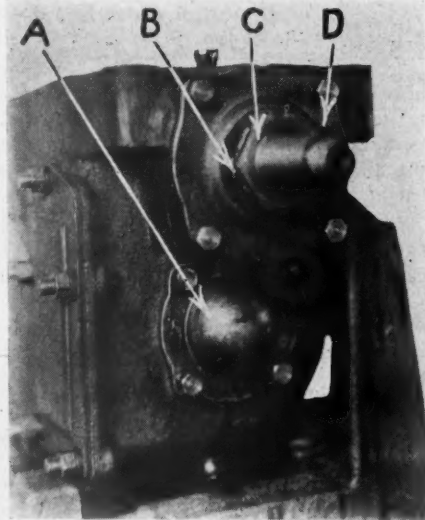
The Detroit Three-Point Suspension Type of Transmission

To completely disassemble the Model H transmission, which is made for trucks of 1½ to 3½ tons capacity, proceed as follows, after the unit has been displaced from the chassis: **Remove drain plug** at bottom of case and **drain all lubricant. Remove cap screws** (10⅜ in.) and **lift off base.** Two are long screws extending through the cover plate. The control base is the larger case and carries the shifter rods and forks.

## Removing the Main Shaft

Throughout reference will be made to the front and rear end of the unit. The front end is that carrying the drive gear assembly. The rear is easily identified by the arms or extensions from the lower or main base. To remove the mainshaft **remove the four cap screws and lock washers securing the rear mainshaft bearing cap.** The screws are ¾ x 1¼ in. **Remove mainshaft bearing cap and gasket.** This bearing cap is constructed in two parts, the cap proper and a packing nut. The latter threads into the cap, has three slots, and a packing is interposed between the nut and the cap. There

is a hole in the cap, and after the nut is set up flush a cotter pin is inserted through the opening in the cap and a slot in the nut. This prevents movement of the nut. The assembly is shown in an ac-



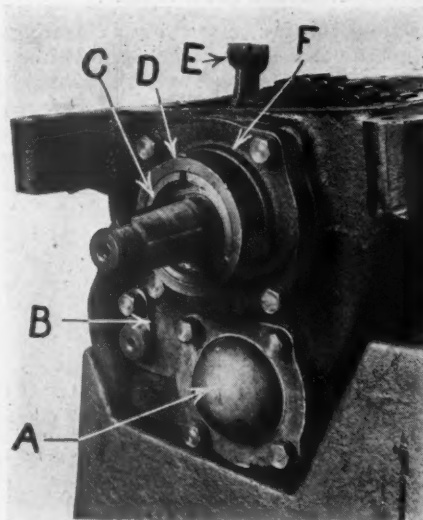
Showing the Front End of Case and Bearing Cap Assembly of the Mainshaft

A. Front countershaft bearing cap. B. Front drive gear bearing cap. C. Washer. D. Lock nut

companying illustration. Hold the two gears on mainshaft and **pull out mainshaft at rear end. Lift out the gears.** It may be that the bearing retainer will come away with the mainshaft.

## Removing Drive Gear Sub Assembly

Next remove the drive gear bearing cap. Remove cap screws (4) and lock



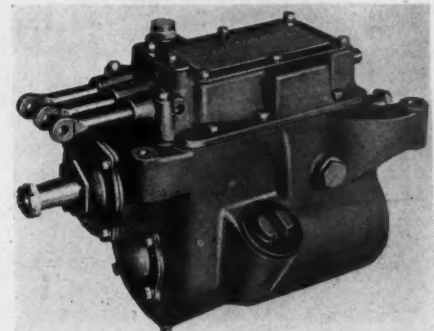
The Rear of Countershaft and Mainshaft is Supported in Ball Bearings Contained in Removable Caps

The idler and reverse gearshaft is locked by a pin engaging a slot milled in shaft. A. Rear countershaft bearing cap. B. Locking plate. C. Packing nut. D. Cotter. E. Reverse fork. F. Rear mainshaft bearing cap.

washers from large bearing cap at the front. Displace gasket. Lift out spigot bearing, which is in the inside of the drive gear. Drive out the drive gear from the inside.

The next step is to remove the reverse and idler shaft. **Back out the reverse shifter fork pivot stud** on left side of the case. This will free the reverse shifter fork. **Lift out the reverse shifter fork.** It is well to note its position before removing. It can only be replaced correctly, however.

The idler shaft is supported within the case by a boss and the other end of the shaft extends through the case. This end has a milled slot, and a plate, held by a cap screw and a lock washer, fits in the slot preventing movement of the shaft. To remove the shaft, **remove cap screw**



The Detroit Model H Four-Speed, Four-Point Suspension Type of Transmission

and lock washer holding the reverse idler shaft and lock plate and remove reverse idler shaft lock plate. Drive out idler shaft from the inside of the case, using a small pinch-bar. Drive against the shaft, not the gears. Remove idler shaft and reverse gears.

## Removing Countershaft

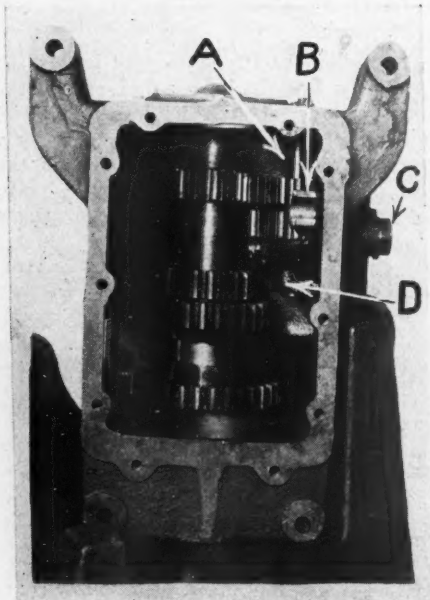
To remove the countershaft proceed as follows: **Remove cap screws (4) and lock washers from rear countershaft bearing cap. Remove cap and gasket.** Drive countershaft towards rear of case to clear bearings from case. **Remove rear countershaft bearing, using a gear puller and PULL AGAINST THE INNER RACE, NOT THE OUTER. Lift countershaft out and use puller to remove the front bearing.**

After disassembling wash all parts thoroughly in kerosene and wash the case as well, inside and out. Assuming that the drive gear or its bearings are damaged and that the replacement of either part is necessary, proceed as follows: **Straighten tits on washer between lock and bearing nuts so nuts can be turned. Back off lock nut, remove washer**



and bearing nut. Remove oil retainer ring, bearing cap, nut, bearing retainer with bearing, spacer, large bearing and bearing shield.

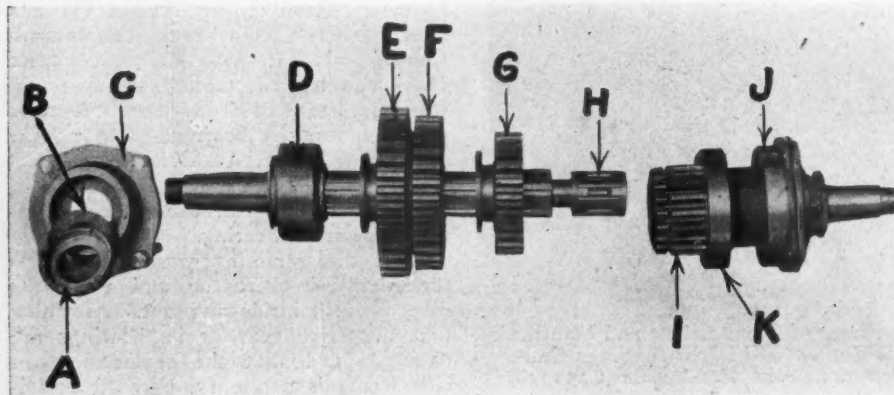
To reassemble slip bearing shield on shaft and next to gear. Press large bearing on shaft and flush to shield with an arbor press. If smaller bearing in retainer is to be replaced with a new one, press it in the retainer. Replace retainer on shaft and drive it home to the spacer. Replace nut or spacer (grooved), a slip fit. Replace oil retainer ring and bearing nut. Set up bearing nut tight. Spin shaft and see that there is no end play and that it turns easily and freely. Replace washer and lock nut and bend over titts on washer to lock both nuts.



The Reverse or Idler Shaft is Supported by a Boss in the Case and is Removed From the Rear of the Case

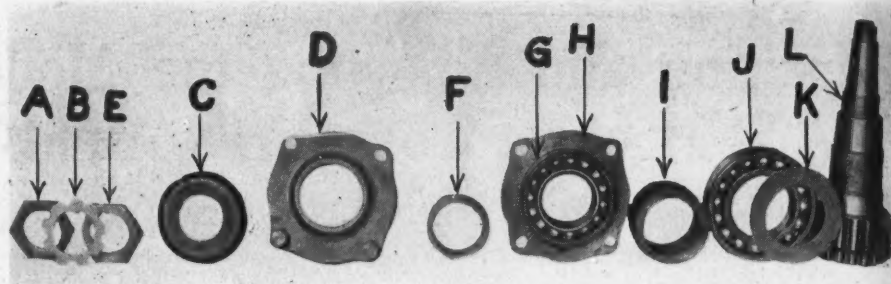
The reverse shifter fork is mounted on the idler shaft lock screw extending through the side of the case. A. Reverse and idle shaft. B. Reverse shifter fork. C. Pivot stud. D. Boss.

Replacement of the gears on the mainshaft is easy, as these slide on the shaft. In the event the rear bearing of the mainshaft is damaged and must be replaced with a new one, proceed as follows: Remove locking wire in lock nut. This wire extends through the nut into one of four



Showing the Mainshaft Assembly and the Relation of the Parts as Assembled in the Case

A. Packing nut. B. Packing. C. Bearing cap. D. Rear bearing. E. First and reverse gear. F. Second gear. G. Third and high. H. Spigot bearing. I. Drive gear. J. Bearing cap. K. Bearing



The Drive Gear Completely Disassembled and Showing the Parts in the Order of Proper Assembly, Beginning From Left to Right

A. Lock nut. B. Washer. C. Oil return ring. D. Mainshaft bearing cap. E. Bearing nut. F. Nut. G. Bearing retainer. H. Bearing cap. I. Spacer. J. Large bearing. K. Bearing shield. L. Drive gear

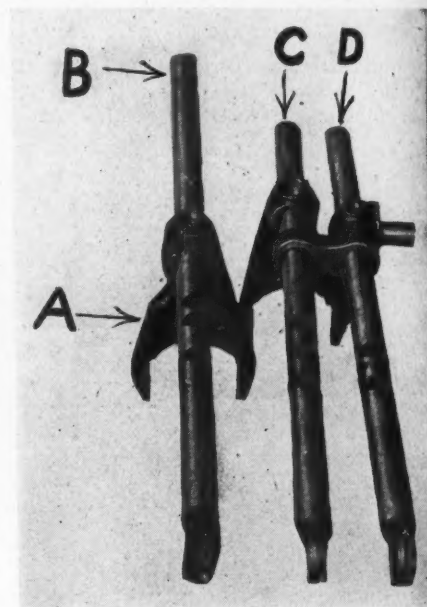
holes or slots in the shaft. Remove locking nut. It has a right hand thread. Press off bearing. In reassembling see that the oil retaining ring, spacer and bearing are flush.

If the teeth of the first or low speed gear are damaged the large countershaft gear, third and second gears will have to be pressed off, as the first or low speed gear is integral with the countershaft. The three removable gears are keyed with Woodruff keys and in reassembling the gears, proceed as follows: Insert key in keyway next to integral gear, and slip second speed gear over shaft but with CHAMFERED EDGE OF TEETH FACING THE SMALL GEAR, the integral gear. Place in arbor press and press gear flush with shoulder on shaft. Insert key in keyway of third speed gear, slip gear over shaft, but with CHAMFER OF TEETH TOWARDS PLAIN END OF SHAFT. A simple method is to slip gear on shaft with hub towards plain end of shaft. Press gear flush to second speed gear. Slip spacer on shaft, slip on large gear with hub towards spacer, and with key, and press flush with spacer. An accompanying illustration shows the correct assembly of the gears on the shaft.

#### Replacing Countershaft

Before starting reassembly all bearings should be cleaned and lubricated with 600 W. To replace countershaft assemble front bearing on shaft. Tap shaft on rear to seat the bearing. Insert countershaft in case. Replace rear bearing. Bring rear bearing flush with case. Add shims

to front end of countershaft. Replace gaskets and front and rear bearing caps. Replace lock washers on cap screws and



Illustrating the Correct Assembly of the Shifter Rods and Forks

These are replaced in control base in the order indicated and the high and third speed rod pull end is not parallel with the other rods. A. Shifter fork. B. High and third. C. First and second. D. Reverse.

set up cap screws. Turn countershaft to see that it rotates easily.

Insert idler and reverse gears in case and have slot for shifter fork towards the front of the case or the large gear next to the case. Insert idler shaft through case, gears and into boss, making sure that the milled end is on the outside of the case and that the milled slot is flush with the case. Replace reverse idler shaft lock plate so that it registers in slot and lock with cap screw. Be sure and replace the lock washer on cap

Replace reverse shifter fork pivot stud with lock washer in side of case. Replace reverse shifter fork. It can only be replaced one way. Tighten reverse shifter fork pivot stud.

#### Replacing Driving Gear

Replace the drive gear assembly from the front end of case. Start the bearing in the case true and use the nut on the shaft to drive on, tapping gently.

Note.—In driving assembly in place see THAT DRIVE GEAR MESHES WITH GEAR ON COUNTERSHAFT.

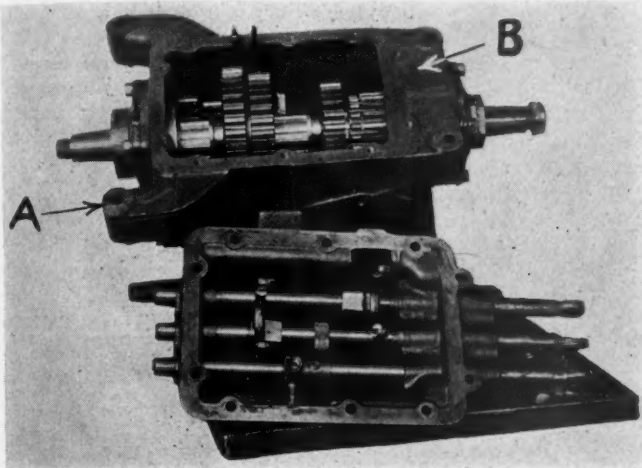
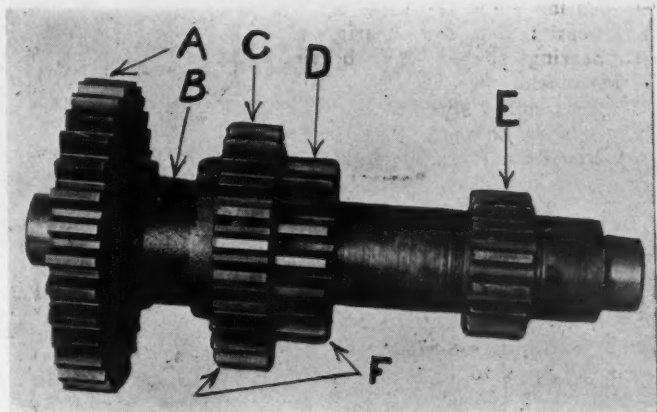
If not damage to the teeth will result because of contact.

Replace front mainshaft bearing cap gasket and cap. Insert and tighten only two cap screws and diametrically opposite, and set up. Next test the bearing by turning shaft. If the bearings bind tap the edges of the cap to center it and again try bearing. Repeat until shaft rotates easily. Replace other two cap screws with lock washers and set up tight.

Replace spigot bearing in drive gear, but first lubricate this member. Replace mainshaft bearing retainer, if it has been taken out, and line up its holes with those

The Countershaft Assembly, Showing Correct Replacement of Gears.

A. Countershaft large gear. B. Spacer. C. Third. D. Second. E. First or low. F. Chamfer.



The Four-Point Type With Control Base Removed, Showing Shifter Forks and Rods.

A. Rear end. B. Front end

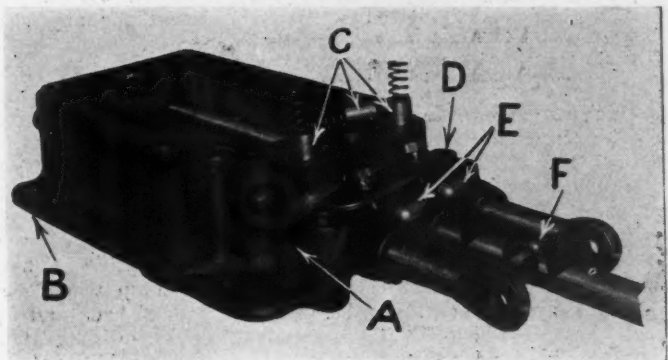
in the case. Insert mainshaft in case and slip on first and second speed gear on shaft with the shifter hub towards the rear of case. Slip on third or high speed gear with its hub or slot towards the front of the case. Push shaft forward into spigot bearing, in drive gear. Replace rear mainshaft bearing, gasket and cap. Replace lock washers and cap screws and set up tight. Try mesh of gears by turning shaft and see that the mainshaft gears slide easily and freely. Replace packing in bearing cap if it has been removed or new is needed, and screw in packing nut. Set up packing nut and lock packing nut by a cotter pin through it and the bearing cap. Before replacing the cover or control base place all gears in neutral, and in replacing the base see that all shifter forks mesh with the slots in the hub of the gears and the reverse finger with the slot in the reverse fork.

#### Disassembling Shifter Rods

In the event it is necessary to remove the shifter rods, proceed as follows: Remove cap screws (2) and lock washers from shifter mesh lock cap. Lift off cap. Directly under this cap will be found three springs inserted in the shifter mesh locks. Remove shifter mesh lock with springs. The shifter forks are secured to the shifter rods by set screws. To remove shifter forks loosen set screws and pull rods out. The CENTER ROD IS REMOVED FIRST because it contains the interlock spacer. This interlock spacer is a small pin located in the center rod interlock between the shifter pins, which are inserted through holes in

The Control Base With Shifter Lock Caps, Etc.

The shifter mesh lock cap is shown removed and one of the shifter mesh locks with its spring is displaced. A. Access hole. B. Control base. C. Shifter mesh lock and spring. D. Shifter mesh lock cap. E. Interlock pins. F. Interlock Spacer.



the case. One of these openings is indicated by the letter A in an accompanying illustration, which also shows the center or first and second speed rod partially withdrawn from the case.

In replacing the shifter rods in the case it is important that they be located correctly. An accompanying illustration

shows the rods with forks removed from the case and in the order they should be replaced. To replace rods insert center rod in control base, bring interlock slots to edge of hole, insert interlock spacer into rod and push rod to place. Slip on center shifter fork. Insert one interlock pin through side hole, pushing it gently in to interlock slot of center rod. Care must be taken not to knock interlock spacer out of center rod in hole.

Insert shifter rod on the same plan as the interlock pin just inserted, slip on fork or reverse finger, as the case may be. Bring rod to a neutral position. Insert other interlock pin from the other side, pushing it into slot in center rod. Insert rod and slip on fork or finger.

Insert mesh lock with springs. Replace mesh lock cap, lock washers and cap screws. Set up cap screws. Insert shifter fork lock screws in place and lock with wire. Shift each rod to see that they work freely and also try to shift other two rods when one is lifted to see that interlock functions properly.



One Hundred and Fifty Salesmen From the United States and Canada Were Gathered at the Eighth Annual Convention of the Champion Spark Plug Co., Toledo, Ohio

The convention was a complete success, its two-week session being devoted to business interspersed with recreation



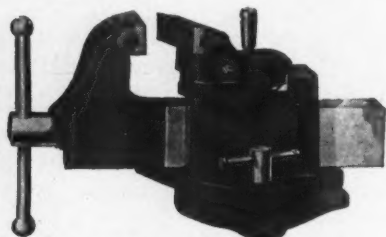
## Service Station and Repair Shop Appliances

### Columbian Sledge-Tested Vises

Malleable iron is used in the construction of the vises, manufactured by the Columbian Hardware Co., Cleveland, O. They are made with cored or hollow jaws, making possible the complete annealing and malleablizing of the iron.

All the vises to be used for metal working have removable jaw faces made of high grade tool steel. Tapered screws, slightly countersunk, hold the faces tightly in place. Besides the advantage of being able to replace jaw faces that have been worn smooth, the removable jaw faces can be replaced at any time by specially formed jaw faces for unusual or difficult shapes.

The corrugations of Columbian jaw faces are cut on a shaper in two directions. By the method a jaw face with



**Columbia Vise**

Note the tongue and groove construction of the removable, tool-steel jaw-faces

an efficient, even, perfect grip is produced. The screws are all made of cold-rolled steel, the handles and balls are formed from one piece so that the balls cannot come off, and the balls are shaped so that they do not wear or wedge into the screw head. Between the screw head and the vise there is a steel washer to take up wear, and on the inside there is a cone bearing which eliminates play between the jaw and screws.

The adjustable jaw machinist's vise, shown herewith, is made with a swivel base. The design of this vise is such that it is just as strong as the solid jaw vise.

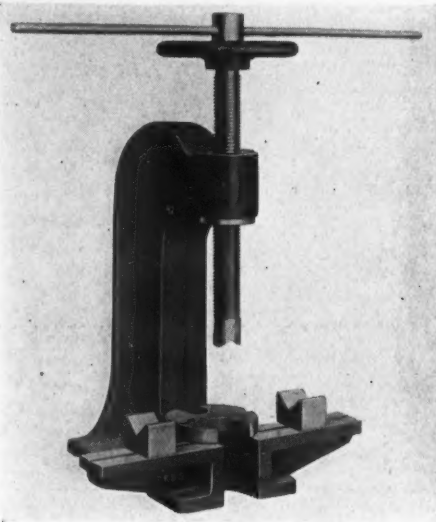
### Auto Press MK No. P-2

The Auto Press MK No. P-2, manufactured by the Columbia Mfg. Co., Belleville, Ill., is designed particularly for the garage or repair shop.

The frame is made of a special steel casting, and a 10-in. hand wheel is provided, in addition to a 3/4-in. rod, passing through an eye in the head above the wheel, which exerts sufficient pressure to bend 2 1/2-in. stock. The special alloy steel screw having four threads to the inch is capped by a notched swivelled nut turning on a bronze bearing plate.

The V blocks can be slid to and fro along a level base cast integral with the main casting. These blocks maintain their centered position in relation to the

screw because of their tongues which run in the grooves of the base. Below the screw is a 7-in. plate, which has four slots with opening of 3/4 in., 1 in., 1 1/2



**Columbia Hand Press**

It is designed for the repair shop

in., and 2 1/2 in. This gives quick adjustment for any shaft when pressing off gears.

The testing attachment is supported by two heavy brackets, requiring only the turning of one set screw on each bracket in order to remove or put it in place. The shaft passing through these brackets is 7-16 in. in diam. It is movable and has a slot throughout its length in which the guides of the center supports travel. This slot keeps the center lined up when the supporting arms are moved back and forth on the shaft. The press sells at \$112.50. Centering shaft, \$31.50 additional.

### Mechanics' Favorite Soap

The soap produced by the Wenzelmann Mfg. Co., Galesburg, Ill., known as the Mechanic's Favorite Soap, is made from pure vegetable oils. It contains no animal fat, and lathers freely in hard or soft water. It is also useful for cleaning showcases and windows, and is stated to remove grease, oil, tar, paint, varnish, shellac or ink. The price to the jobber is \$1.80 per box of 30, and forty cents freight allowance per hundred lbs. when ordered in lots of ten boxes or more. Each box weighs 13 lbs.

The Motor Traders' Association of N. S. W., Australia, representing 1000 dealers, is establishing a trade and technical library, which will include catalogs, data sheets, etc., and desires manufacturers of automobile equipment to send such publications to the association, Challis House, Martin Place, Sydney, N. S. W.

### Carll Wrenches

The new Carll wrench embraces many features and because of its adjustments and reversible construction it is a valuable tool. The manufacturer is the Practical Tools Co., 296 Broadway, New York City, and the exclusive sales agent is M. W. Robinson Co., 296 Broadway, New York City.

It is drop-forged from high grade steel and carefully hardened and tempered. The reversibility of its sliding jaws enable it to be used either as a nut or pipe wrench. Its use is equally well adapted on square or hexagon nuts. The longer knurl has coarse threads, which prevent stripping, and is fitted with a spiral spring for holding it in adjustment.

Its strength is a special feature. As may be seen from the illustration, the adjustable jaw has an extended bearing in



**This Carll Adjustable Wrench Permits a Multiplicity of Uses**

the head, which not only supports it, but gives it great strength and stiffness. It permits a wider range, having 6-in. opening with safety up to 1 in., 8-in. up to 1 3/4 in., and 10-in. up to 1 3/4 in. It is packed one in a box, one half-dozen to a carton.

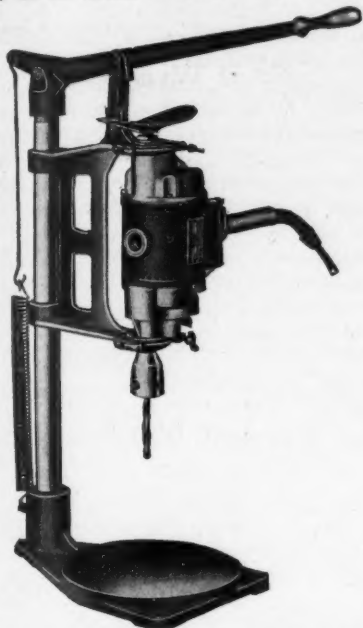
### Little Giant Electric Drilling Stand

In order to increase the scope of the work that might be accomplished by Little Giant Electric Drills, produced by the Chicago Pneumatic Tool Co., Chicago, Ill., this same company is providing a frame and base plate which virtually makes a drill press out of these ordinary portable drills without impairing their usefulness as a portable drill.

The stand is substantially made and permits accurate drilling. The weight of the drill and drill arm is counterbalanced by means of a spring, and a key or feather a movable bracket that keeps the drill in vertical alignment and insures the drilling of straight holes. It is held to place by two clamping straps, shown in the illustration, secured by screws and thumb nuts, allowing it to be removed in a few seconds and used as a portable drill.

The larger sizes are provided with toe slots in the base plate, so that the work may be bolted down if desired. These stands are built in five sizes to take the

standard Little Giant Electric Drills of either the universal or direct current type, ranging in drilling capacity of from 3-16 in. to 1/2 in. metal.



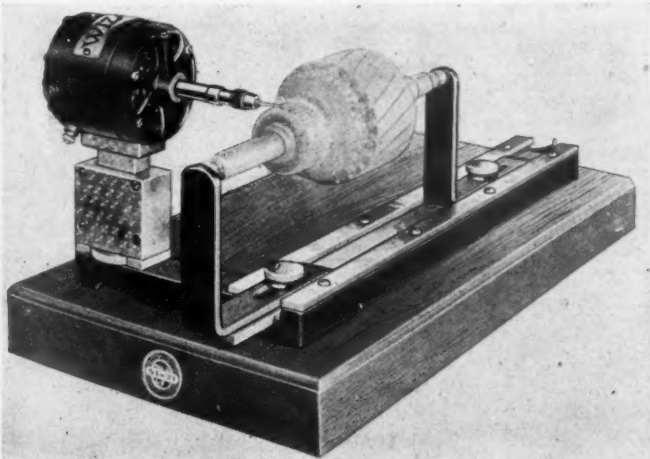
Special Stand to Receive Little Giant Electric Portable Drills, Thereby Increasing Their Serviceability

### Wizard Undercutter

The Wizard Undercutter, manufactured by Paul G. Niehoff and Co., 232-242 E. Ohio St., Chicago, Ill., is an up-to-date and ingenious device for undercutting commutators such as are used on motor trucks, automobiles and tractors.

All commutators require cutting down at different times which also necessarily involves the undercutting of the mica insulation between the copper segments on the commutator. It is for this particular work that the Wizard Undercutter was designed. The operation is done direct from the motor which may be adjusted to fit various diameters of commutators. The armature is placed between two adjustable brackets and when fastened in position may be moved back and forth on a sliding base in the act of undercutting each slot.

By actual comparison, it was found that this method of undercutting enables the mechanic to complete the work in much

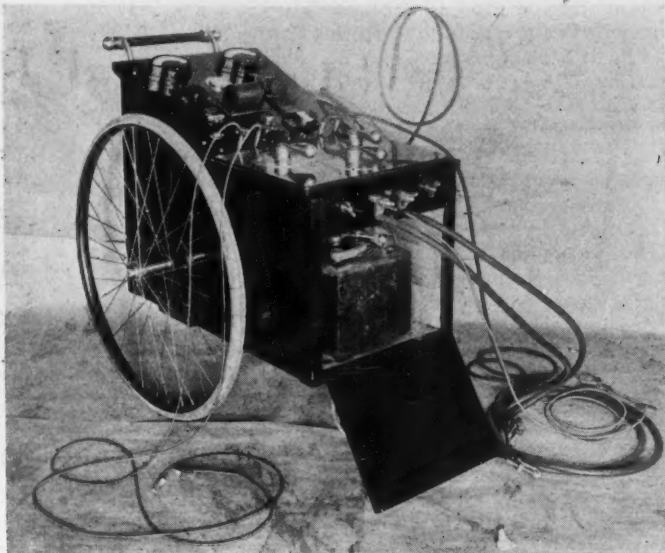


Showing the Commutator in Phantom Mounted on the Wizard Undercutter.

The brackets supporting the commutator are moved on a sliding base.

### Niehoff Test Kart

This portable electrical testing outfit not only presents an attractive appearance but it is capable of effectively rendering all manner of tests with which the repairman is daily confronted.



less time than by any other means. It operates either with alternating current or direct current. The motor is made for speed necessary for this kind of work. This device is strongly built, mounted on heavy hardwood base and is listed at \$60.

### Niehoff Test Kart

The Niehoff Test Kart, a complete and elaborate electrical testing device is a very attractive and handy outfit especially adapted for the larger garages and service stations, due to the fact that it is portable and easily wheeled about to the truck or motor car whereupon an exhaustive test may be made on any part of the electrical mechanism of the various system as are used on all models different automobiles, trucks and tractors.

With it the starter, generator, battery, lights, ignition, coils, magneto, fuses, circuits, high tension, wiring, spark plugs, distributor heads, external condensers, the voltage and ampere meter, Ford magnets and Ford ignition coils can be checked and tested. This outfit will also recharge Ford magnets while on the car as well as burn out any shorts that may be in the magneto due to the lodgment of some cotter pin or some other foreign substance that may act as a conductor. All the connections and cables as well as switches are numbered and instructions give full information as to how they are to be used.

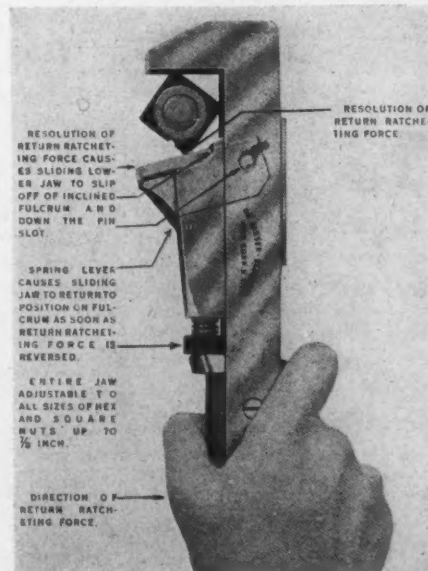
The fore-part of the Kart contains a chamber for the insertion of a storage battery while the rear part is provided with drawers for tools and space for cables.

The construction of the test kart throughout has been given very careful consideration. It stands 35 in. high, by 38 in. long, by 27 in. wide. The cabinet work is in mahogany finish. Base plates on switches and testing parts consist of hard rubber.

Apart from its practical features, it is an attraction in itself that will greatly add to the prestige of the shop in which it may be used. It is designed and manufactured by Paul G. Niehoff and Company, Inc., 232-242 E. Ohio Street, Chicago, Ill., who are also manufacturers of platinum and tungsten contacts besides specializing in a complete line of testing instruments for the automotive trade. The Test Kart is listed at \$350.00.

### Palm Speed Wrench

An open jaw with automatic ratchet action is the feature of this wrench, which



This Automatic Acting Wrench Facilitates Loosening and Tightening of Hexagon and Square Nuts

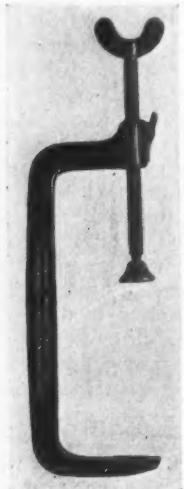


is said to save three-fourths of the time consumed in the usual nut-turning operations. It is manufactured by the De Lisser Mfg. & Export Corp., 1123 Broadway, New York City.

It is made of special alloy steel, carefully machined and heat-treated. The angle between the advance and return motion is the smallest it is possible to attain, making it most adaptable for use in close quarters. The wear is insignificant, because the movable parts do not slide over each other when the wrench is rigid under load or strain. The motion takes place only when the load is removed. It cannot be used in the wrong direction, and thus cause the spreading of the jaws and bending of back. This same wrench can be used on both square and hexagon nuts.

### Stevenson Quick-Action Valve Remover

By utilizing the Quick Action Valve Remover, the workman is able to use both hands when removing the valve key and spring. When the repair job is finished this device can be instantly released by pressing the catch, while a screw feature gives the exact opening desired.



Stevenson Valve Lifter

Incorporates a catch feature that permits of ready adjustment.

In using this tool it is placed in position over the valve with the pronged end beneath the valve spring. When in the proper position the catch is released, which allows the pivoted button at the end of the screw to rest on the valve head, and then a few turns on the wing nut compresses the spring, permitting the key to be withdrawn. By a slight touch on the thumb catch the remover is instantly disengaged and the valve may be removed for examination. All parts are of malleable iron and amply strong. It is manufactured by the Hedden Place Machine Co., East Orange, N. J.

### Hempy-Cooper Ladle Jig

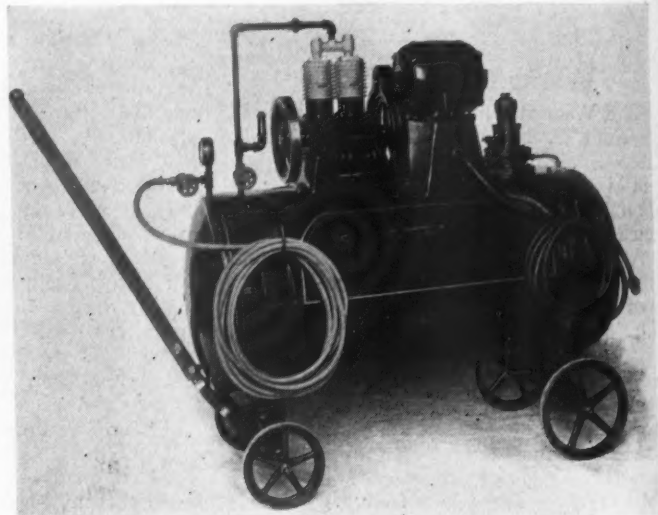
This ladle jig, manufactured by the Hempy Cooper Mfg. Co., Firestone Bldg., Kansas City, and distributed exclusively by the Fairbanks Co., New York City, is designed for the Ford and Fordson tractor. It is a combination ladle and rebabbiting jig, operated by raising and lowering the plunger, which opens and closes the valves and allows the babbitt



Combination Ladle and Rebabbiting Jig for Fords

to rush into the bearings from both sides.

Two adjustable blocks operating from the handle provide for the proper width of bearings and eliminate the possibility of the babbitt leaking. As the babbitt flows from the bottom of the ladle jig, only the pure babbitt is used in the bearings as the scum rises to the top of the



Model 40 Portable Tank Air Compressor Outfit.

ladle. Model C3 is for the Ford, C4 for the Fordson tractor.

### Electrical Tester and Trouble Locator

The four-in-one tester and trouble locator, produced by C. W. Eisemann, Nebraska City, Neb., is intended to aid the repairman in quickly and accurately locating grounds shorts and crosses in electrical wiring, motors, generators and appliances, by eliminating the need of cut-



Employing the Eisemann Tester

ting, disconnecting, reconnecting, splicing, soldering, tapping and tagging wires and leads.

The instrument is used like an exploring coil, when remote from strong magnetic fields, and as an a.c. galvanometer when near coils or heavy currents. As an explorer or current detector, it is claimed to be considerably more sensitive to small currents of standard lighting frequency than the small commercial and home-made coils. Another feature is that its indications are visual and therefore unaffected by noise.

As an a.c. galvanometer, the voltage drop in a No. 10 wire with only one ampere flowing, can be detected between points less than 2 in. apart. This instrument complete can be carried in the vest pocket. It sells at \$12.50.

### Portable and Stationary Air Compressor Outfits

The Union Engine and Mfg. Co., Butler, Pa., is offering portable and stationary air compressor outfits, both types having a capacity of 4 cu. ft. of free air per minute and a 2 1/4-in. bore and a 2-in. stroke. The following details apply to both models, except that Model 45, the

stationary outfit, is equipped with 5 ft. of BX cable, 25 ft. of armored hose and Hasen hose couplings, and that Model 40, the portable outfit, is provided with 20 ft. of heavy electric connecting cord, 20 ft. of special rubber hose.

The splash system of lubrication is employed. The cylinders, pistons and rings are constructed of fine grade gray cast iron, the crankshaft and connecting rods are of 35-point carbon steel, and the bearings are of white metal; the gear wheel is of cast iron, and the pinion gear is of specially constructed fabroil. The equipment consists of a twin-cylinder compressor, which has a speed of 350 r.p.m., a 1/2 hp. high-grade motor and Union Automatic Control, mounted on a solid cast iron base, which is fitted to the top of the 18 x 42-in. tank, having 150 lb. working pressure, a pressure gage and safety valve, globe valve, check valve and switch, switching plug and Hansen Automatic Air Chuck. Model 45 sells at \$325 and Model 40 sells at \$340.

**Note:** Under Carburetor Inlet Diameter will be found either the size of the main air intake or the gasoline fuel line

[illegible]



Replacement Table—Continued

Name, Model, Tonnage and Year	ENGINE				BRAKE LINING				FRAME					
	Piston Rings		Carburetor	Service	Emergency		No. of Pieces	Length	Width	No. of Pieces	Length	Width	Back of Driver's Seat	Over All
	No. per cyl.	Width			No. of Pieces	Thickness								
Diamond TK-3 1/2	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	145	37	145	145	37	37	
Diamond T-EL-5	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	143	37	143	143	37	37	
Diamond T-S-5	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	156 1/2	37	156 1/2	156 1/2	37	37	
Diehl A	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	90	53	90	90	53	53	
Doane 3 1/2—1917-18-19	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	126	60	126	126	60	60	
Doane 3 1/2—1917-18-19	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	168	64	168	168	64	64	
Doane 6—1917-18-19	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	47 1/2	38	47 1/2	47 1/2	38	38	
Dodge Brothers 1 1/2—1917-20	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	145 1/2	34	145 1/2	145 1/2	34	34	
Dorris K4-4—1918-20	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	179 1/2	36	179 1/2	179 1/2	36	36	
Dorris K7-3 1/2—1919-20	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	36	124	124	36	36	
Double Drive B 3	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	118	31	118	118	31	31	
Douglas GW-1 1/2	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	118	31	118	118	31	31	
Douglas H-2	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	118	31	118	118	31	31	
Douglas HW-2	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	132	31	132	132	31	31	
Douglas I-3	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	126	39 1/2	126	126	39 1/2	39 1/2	
Duplex A-3 1/2	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	121	34	121	121	34	34	
Duplex A-3 1/2	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	123	44	123	123	44	44	
Duty 2-1920	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	Opt	Opt	Opt	Opt	Opt	Opt	
Eagle 100-2	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	Opt	Opt	Opt	Opt	Opt	Opt	
Ellsworth 25A-1 1/2—1918-20	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	60	30	60	60	30	30	
Elmira C1 1/2	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	135	34	135	135	34	34	
Fagel 1 1/2—1920	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	161 1/2	37 1/2	161 1/2	161 1/2	37 1/2	37 1/2	
Fagel 2 1/2—1917-20	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	94	34	94	94	34	34	
Fagel 4500—1917-20	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	132	34	132	132	34	34	
Fagel 5300—1917-20	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	112	33	112	112	33	33	
Famous B10-1—1919-20	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	118	34	118	118	34	34	
Famous B12-1 1/2—1919-20	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	154	38	154	154	38	38	
Fargo 017, P18-2, P19-2, P20-2	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	86	38	86	86	38	38	
Federal 8D-1	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
Federal 10-1	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
Federal UE-2	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	136	36	136	136	36	36	
Federal WE-3 1/2	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	108	34	108	108	34	34	
Federal XE-5	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	121	34	121	121	34	34	
Federal Light Duty	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	144	36	144	144	36	36	
Federal Heavy Duty	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	150	32	150	150	32	32	
Ford T-1	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
Front-Drive C1 1/2	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
F.W.D. B-3	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
Garford 25-1 1/2—1920	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	136	36	136	136	36	36	
Garford 70B-3 1/2—1920	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	108	34	108	108	34	34	
Garford 77D-3 1/2—1920	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	121	34	121	121	34	34	
Garford 77C-3 1/2—1920	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	144	36	144	144	36	36	
Garford 68-5—1920	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	150	32	150	150	32	32	
Gary F-1 1/2	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
Gary GT-1 1/2	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
Gary J-2 1/2	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
Gary K-3 1/2	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
Gary M-5	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
Genix K-2 1/2—1920	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
Genix M-1 1/2—1920	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
Glant 16-1	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
Glant 17-3 1/2	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
G.M.C. 16-1 1/2—1916-20	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
G.M.C. 31A-1 1/2—1915-20	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
G.M.C. 31B-1 1/2—1915-20	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
G.M.C. 41A-2—1915-20	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
G.M.C. 41B-2—1915-20	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
G.M.C. 41C-3 1/2—1916-20	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
G.M.C. 71A-3 1/2—1916-20	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
G.M.C. 71B-3 1/2—1916-20	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
G.M.C. 101A-6—1916-20	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
G.M.C. 101B-6—1916-20	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
Gramm-Bernstein 16-1 1/2—1920	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
Gramm-Bernstein 65-1 1/2—1920	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
Gramm-Bernstein 20-2—1920	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
Gramm-Bernstein 25-3 1/2—1920	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	
Gramm-Bernstein 35-3 1/2—1920	3	1 1/2	3	1 1/2	3 1/2	3 1/2	8	124	23	124	124	23	23	

[illegible]



Replacement Table—Continued

Name, Model, Tonnage and Year	ENGINE				BRAKE LINING						FRAME			
	Piston Rings	Carburetor	Inlet Diameter	Outlet Diameter	No. of Pieces	Thickness	Width	Length	No. of Pieces	Thickness	Width	Length	Back of Driver's Seat	Over All
Service 31-1½-1919-20	...	...	1 1/4	1 1/4	...	...	3 1/4	12	...	...	3 1/4	12	121 1/2	34
Service 36-1½-1919-20	...	...	1 1/4	1 1/4	...	...	3 1/4	13 1/2	...	...	3 1/4	13 1/2	121 1/2	34
Service 51-2½-1919-20	...	...	1 1/4	1 1/4	...	...	3 1/4	13 1/2	...	...	3 1/4	13 1/2	150 1/4	38
Service 51-2½-1919-20	...	...	1 1/4	1 1/4	...	...	3 1/4	16	...	...	3 1/4	16	145 3/4	38
Service 76-3½-1919-20	...	...	1 1/4	1 1/4	...	...	3 1/4	18 1/2	...	...	3 1/4	18 1/2	145 3/4	38
Service 101-5-1919-20	...	...	1 1/4	1 1/4	...	...	3 1/4	45	...	...	3 1/4	45	60	43
Shaw M2-1918-20	...	...	1 1/4	1 1/4	...	...	3 1/4	11	...	...	3 1/4	11	120	34
Signal F-1	...	...	1 1/4	1 1/4	...	...	3 1/4	12	...	...	3 1/4	12	120	34
Signal F-1½	...	...	1 1/4	1 1/4	...	...	3 1/4	12	...	...	3 1/4	12	126	34
Signal J-2½	...	...	1 1/4	1 1/4	...	...	3 1/4	13 1/2	...	...	3 1/4	13 1/2	168	38
Signal M-3½	...	...	1 1/4	1 1/4	...	...	3 1/4	16	...	...	3 1/4	16	172	38
Signal R-5	...	...	1 1/4	1 1/4	...	...	3 1/4	10 1/2	...	...	3 1/4	10 1/2	120	32
Standard 1-K-1	...	...	1 1/4	1 1/4	...	...	3 1/4	13 1/2	...	...	3 1/4	13 1/2	122	32
Standard 78-2½	...	...	1 1/4	1 1/4	...	...	3 1/4	15 1/2	...	...	3 1/4	15 1/2	144	38
Standard 69-3½	...	...	1 1/4	1 1/4	...	...	3 1/4	17 1/2	...	...	3 1/4	17 1/2	144	38
Standard 89-5	...	...	1 1/4	1 1/4	...	...	3 1/4	13 1/2	...	...	3 1/4	13 1/2	120	32
Sterling 1½-1920	...	...	1 1/4	1 1/4	...	...	3 1/4	13 1/2	...	...	3 1/4	13 1/2	120	32
Sterling 2½-1920	...	...	1 1/4	1 1/4	...	...	3 1/4	13 1/2	...	...	3 1/4	13 1/2	138	34
Sterling 3½-1920	...	...	1 1/4	1 1/4	...	...	3 1/4	13 1/2	...	...	3 1/4	13 1/2	144	38
Sterling 5-Worm-1920	...	...	1 1/4	1 1/4	...	...	3 1/4	18	...	...	3 1/4	18	158	38
Sterling 7½-1920	...	...	1 1/4	1 1/4	...	...	3 1/4	30	...	...	3 1/4	30	182	32
Stewart M7-2-1918-20	...	...	1 1/4	1 1/4	...	...	3 1/4	8	...	...	3 1/4	8	99 1/2	32
Stewart M12-1-1920	...	...	1 1/4	1 1/4	...	...	3 1/4	8	...	...	3 1/4	8	119 1/2	32
Stewart M9-1½-1918-20	...	...	1 1/4	1 1/4	...	...	3 1/4	4 1/2	...	...	3 1/4	4 1/2	41 1/2	32
Stewart M10-3½-1918-20	...	...	1 1/4	1 1/4	...	...	3 1/4	4 1/2	...	...	3 1/4	4 1/2	77 1/2	32
Stewart M11-½-1919-20	...	...	1 1/4	1 1/4	...	...	3 1/4	50 1/2	...	...	3 1/4	50 1/2	132	32
Stewart M10X-1920	...	...	1 1/4	1 1/4	...	...	3 1/4	16	...	...	3 1/4	16	138	32
Stoughton B-1½	...	...	1 1/4	1 1/4	...	...	3 1/4	19	...	...	3 1/4	19	116	34
Stoughton D-2	...	...	1 1/4	1 1/4	...	...	3 1/4	45	...	...	3 1/4	45	127	36
Stoughton E-2½	...	...	1 1/4	1 1/4	...	...	3 1/4	52	...	...	3 1/4	52	132	36
Success B-2½	...	...	1 1/4	1 1/4	...	...	3 1/4	13	...	...	3 1/4	13	124	32 1/2
Sullivan E-2-1916-20	...	...	1 1/4	1 1/4	...	...	3 1/4	45	...	...	3 1/4	45	107 1/2	34
Superior D-1-1919-20	...	...	1 1/4	1 1/4	...	...	3 1/4	13	...	...	3 1/4	13	124	32 1/2
Superior E-2-1919-20	...	...	1 1/4	1 1/4	...	...	3 1/4	45	...	...	3 1/4	45	107 1/2	34
Texas A-38-½	...	...	1 1/4	1 1/4	...	...	3 1/4	11 1/2	...	...	3 1/4	11 1/2	114	36
Tiffin GW-1½-1919-20	...	...	1 1/4	1 1/4	...	...	3 1/4	46	...	...	3 1/4	46	114	36
Tiffin MW-2½-1919-20	...	...	1 1/4	1 1/4	...	...	3 1/4	52	...	...	3 1/4	52	138	32 1/2
Tiffin PW-3½-1919-20	...	...	1 1/4	1 1/4	...	...	3 1/4	58	...	...	3 1/4	58	151	35 1/2
Tiffin TW-5-1919-20	...	...	1 1/4	1 1/4	...	...	3 1/4	58	...	...	3 1/4	58	156	35 1/2
Tiffin UW-6-1919-20	...	...	1 1/4	1 1/4	...	...	3 1/4	58	...	...	3 1/4	58	156	35 1/2
Titan 3½-1919	...	...	1 1/4	1 1/4	...	...	3 1/4	40	...	...	3 1/4	40	144	34
Titan 5-1919-20	...	...	1 1/4	1 1/4	...	...	3 1/4	50	...	...	3 1/4	50	144	34
Titan 6-1918-20	...	...	1 1/4	1 1/4	...	...	3 1/4	50	...	...	3 1/4	50	144	34
Titan 2½-1920	...	...	1 1/4	1 1/4	...	...	3 1/4	26	...	...	3 1/4	26	135 1/2	32 1/2
Tower J-1½-1920	...	...	1 1/4	1 1/4	...	...	3 1/4	11 1/2	...	...	3 1/4	11 1/2	138 1/2	32 1/2
Tower H-2½-1919-20	...	...	1 1/4	1 1/4	...	...	3 1/4	13 1/2	...	...	3 1/4	13 1/2	138 1/2	32 1/2
Tower G-3½-1919-20	...	...	1 1/4	1 1/4	...	...	3 1/4	15 1/2	...	...	3 1/4	15 1/2	152 1/2	42
Traffic C-4000-1919-20	...	...	1 1/4	1 1/4	...	...	3 1/4	38	...	...	3 1/4	38	120 1/2	34
Transport 20-1	...	...	1 1/4	1 1/4	...	...	3 1/4	45 1/2	...	...	3 1/4	45 1/2	101	34
Transport 30-1½	...	...	1 1/4	1 1/4	...	...	3 1/4	48 1/2	...	...	3 1/4	48 1/2	117	34
Transport 50-2½	...	...	1 1/4	1 1/4	...	...	3 1/4	50 1/2	...	...	3 1/4	50 1/2	117	34
Traylor B-1	...	...	1 1/4	1 1/4	...	...	3 1/4	50 1/2	...	...	3 1/4	50 1/2	120	34
Traylor C-1½	...	...	1 1/4	1 1/4	...	...	3 1/4	50 1/2	...	...	3 1/4	50 1/2	120	34
Triangle AA-1½-1920	...	...	1 1/4	1 1/4	...	...	3 1/4	50 1/2	...	...	3 1/4	50 1/2	120	34
Triangle A-1½-1918-20	...	...	1 1/4	1 1/4	...	...	3 1/4	50 1/2	...	...	3 1/4	50 1/2	120	34
Triangle B-2½-1919-20	...	...	1 1/4	1 1/4	...	...	3 1/4	50 1/2	...	...	3 1/4	50 1/2	120	34
Triangle C-2-1920	...	...	1 1/4	1 1/4	...	...	3 1/4	50 1/2	...	...	3 1/4	50 1/2	120	34
Triumph 1½	...	...	1 1/4	1 1/4	...	...	3 1/4	41	...	...	3 1/4	41	94	35
Twin City 2	...	...	1 1/4	1 1/4	...	...	3 1/4	49	...	...	3 1/4	49	126	34
Twin City 3½	...	...	1 1/4	1 1/4	...	...	3 1/4	52	...	...	3 1/4	52	132	34
Twin City FWDA-3½ & B-5	...	...	1 1/4	1 1/4	...	...	3 1/4	52	...	...	3 1/4	52	132	34
Ultimate-2	...	...	1 1/4	1 1/4	...	...	3 1/4	51	...	...	3 1/4	51	131	32 1/2
Ultimate-3	...	...	1 1/4	1 1/4	...	...	3 1/4	51	...	...	3 1/4	51	131	32 1/2

# KEY OF ABBREVIATIONS

Note: Numerals on This Page Correspond With Numerals at Head of Specification Columns on Pages Following

In all Specifications { O—Own  
Op or Opt—Optional

<p><b>Engine:</b> Beav—Beaver Cont—Continental GBS—Golden, Belknap &amp; Swartz Her—Hercules Hin—Hinkley HSp—Herschell-Spillman LeR—Le Roi Lib—Liberty LMF—Light Mfg. &amp; Fdy. Lyc—Lycoming Rut—Rutenber Ster—Sterling TC—Twin City Vict—Victory Wau—Waukesha Wei—Weidely Wis—Wisconsin</p>	<p><b>PT—Plain Tube</b> FIN—Fin Tube ZZT—Zig Zag Tube</p>	<p><b>Lubrication:</b> FS—Force and Splash F—Force Feed S—Splash</p>	<p><b>Carburetor:</b> B&amp;B—Ball &amp; Ball Bent—Bennett Cart—Carter Eag—Eagle Ens—Ensign Fleh—Fletcher Holl—Holley John—Johnson King—Kingston Mar—Marvel Mas—Master Mill—Miller Rayf—Rayfield Strm—Stromberg Shk—Shakespeare Sheb—Schebler Stew—Stewart Till—Tillotson Zen—Zenith</p>	<p><b>Fuel Feed:</b> G—Gravity P—Pressure V—Vacuum</p>	<p><b>Governor:</b> Con—Continental Del—Delaney Dup—Duplex Hin—Hinkley Mer—Merrill McC—McCanna Mon—Monarch Phar—Pharo Pier—Pierce Rug—Ruggles Sim—Simplex Wau—Waukesha</p>	<p><b>Universal:</b> Acm—Acme Bear—Bearings Co. Bld—Blood Brothers Dit—Ditwiler Flex—Flexite Hart—Hartford KB—Kinsler-Bennett Mech—Mechanics M-E—Merchant &amp; Evans Pet—Peters Sned—Snead Spic—Spicer Ster—Sterling Ther—Thermoid UP—Universal Machine UP—Universal Products</p>	<p><b>Ignition System:</b> Aer—Aero AtK—Atwater-Kent Aut—Auto-Lite Bos—Bosch Ber—Berling Con—Connecticut Del—Delco Dix—Dixie Eis—Eisemann Exi—Exide Kin—Kingsdon KW—K. W. Ignition Co. Lor—Lorraine NE—North East POL—Prest-O-Lite Rm—Remy Sim—Simms Spl—Splitdorf Wag—Wagner Wes—Westinghouse</p>	<p><b>Engine Starter:</b> AC—Allis-Chalmers AL—Auto-Lite Bj—Bijur DL—Delco Dy—Dyneto GD—Gray &amp; Davis LN—Leece-Neville NE—North East RE—Remy Wg—Wagner USL—U. S. L. W—Westinghouse</p>	<p><b>Gearset:</b> B-Li—Brown-Lipe Cott—Cotta Covt—Covet D-Sea—Driggs-Seabury Det—Detroit Dun—Dundore Durst—Durst Full—Fuller G-Le—Grant Lees MM—Mechanics Mach. Co Munc—Muncie Rock—Rockford Warn—Warner</p>	<p><b>Clutch (Make):</b> B. B—Borg &amp; Beck Det—Detlaft Full—Fuller D. G—Detroit Gear &amp; Mach. Hart—Hartford B-Li—Brown-Lipe M-E—Merchant &amp; Evans Munc—Muncie Covt—Covet War—Warner</p>	<p><b>Clutch (Type):</b> D—Disc C—Cone</p>	<p><b>Valve Arrangement:</b> H—Overhead L—ELL-Head T—TEE-Head S—Sleeve</p>	<p><b>How Cooled:</b> A—Air C—Centrifugal G—Gear Pump T—Thermo-Syphon</p>	<p><b>Radiator (Make):</b> BW—B &amp; W Brm—Brenem Bus—Bush Can—Candler Chic—Chicago EM—English-Mersick Eur—Eureka Fed—Fedders Flex—Flexo GO—G. &amp; O. Har—Harrison Hoo—Hooven Idl—Ideal Jam—Jamestown Kue—Kuenz Liv—Livingston Lng—Long McC—McCord May—Mayo Per—Perfex R-T—Rome-Turney Spar—Spartan Spec—Special Spi—Spirex Stan—Standard</p>	<p><b>Radiator (Type):</b> C—Cellular H—Honeycomb</p>	<p><b>Universal:</b> Acm—Acme Bear—Bearings Co. 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Lyc—Lycoming Rut—Rutenber Ster—Sterling TC—Twin City Vict—Victory Wau—Waukesha Wei—Weidely Wis—Wisconsin</p>	<p><b>PT—Plain Tube</b> FIN—Fin Tube ZZT—Zig Zag Tube</p>	<p><b>Lubrication:</b> FS—Force and Splash F—Force Feed S—Splash</p>	<p><b>Carburetor:</b> B&amp;B—Ball &amp; Ball Bent—Bennett Cart—Carter Eag—Eagle Ens—Ensign Fleh—Fletcher Holl—Holley John—Johnson King—Kingston Mar—Marvel Mas—Master Mill—Miller Rayf—Rayfield Strm—Stromberg Shk—Shakespeare Sheb—Schebler Stew—Stewart Till—Tillotson Zen—Zenith</p>	<p><b>Fuel Feed:</b> G—Gravity P—Pressure V—Vacuum</p>	<p><b>Governor:</b> Con—Continental Del—Delaney Dup—Duplex Hin—Hinkley Mer—Merrill McC—McCanna Mon—Monarch Phar—Pharo Pier—Pierce Rug—Ruggles Sim—Simplex Wau—Waukesha</p>	<p><b>Universal:</b> Acm—Acme Bear—Bearings Co. Bld—Blood Brothers Dit—Ditwiler Flex—Flexite Hart—Hartford KB—Kinsler-Bennett Mech—Mechanics M-E—Merchant &amp; Evans Pet—Peters Sned—Snead Spic—Spicer Ster—Sterling Ther—Thermoid UP—Universal Machine UP—Universal Products</p>	<p><b>Ignition System:</b> Aer—Aero AtK—Atwater-Kent Aut—Auto-Lite Bos—Bosch Ber—Berling Con—Connecticut Del—Delco Dix—Dixie Eis—Eisemann Exi—Exide Kin—Kingsdon KW—K. W. Ignition Co. Lor—Lorraine NE—North East POL—Prest-O-Lite Rm—Remy Sim—Simms Spl—Splitdorf Wag—Wagner Wes—Westinghouse</p>	<p><b>Engine Starter:</b> AC—Allis-Chalmers AL—Auto-Lite Bj—Bijur DL—Delco Dy—Dyneto GD—Gray &amp; Davis LN—Leece-Neville NE—North East RE—Remy Wg—Wagner USL—U. S. L. W—Westinghouse</p>	<p><b>Gearset:</b> B-Li—Brown-Lipe Cott—Cotta Covt—Covet D-Sea—Driggs-Seabury Det—Detroit Dun—Dundore Durst—Durst Full—Fuller G-Le—Grant Lees MM—Mechanics Mach. Co Munc—Muncie Rock—Rockford Warn—Warner</p>	<p><b>Clutch (Make):</b> B. B—Borg &amp; Beck Det—Detlaft Full—Fuller D. G—Detroit Gear &amp; Mach. Hart—Hartford B-Li—Brown-Lipe M-E—Merchant &amp; Evans Munc—Muncie Covt—Covet War—Warner</p>	<p><b>Clutch (Type):</b> D—Disc C—Cone</p>	<p><b>Valve Arrangement:</b> H—Overhead L—ELL-Head T—TEE-Head S—Sleeve</p>	<p><b>How Cooled:</b> A—Air C—Centrifugal G—Gear Pump T—Thermo-Syphon</p>	<p><b>Radiator (Make):</b> BW—B &amp; W Brm—Brenem Bus—Bush Can—Candler Chic—Chicago EM—English-Mersick Eur—Eureka Fed—Fedders Flex—Flexo GO—G. &amp; O. Har—Harrison Hoo—Hooven Idl—Ideal Jam—Jamestown Kue—Kuenz Liv—Livingston Lng—Long McC—McCord May—Mayo Per—Perfex R-T—Rome-Turney Spar—Spartan Spec—Special Spi—Spirex Stan—Standard</p>	<p><b>Radiator (Type):</b> C—Cellular H—Honeycomb</p>	<p><b>Universal:</b> Acm—Acme Bear—Bearings Co. Bld—Blood Brothers Dit—Ditwiler Flex—Flexite Hart—Hartford KB—Kinsler-Bennett Mech—Mechanics M-E—Merchant &amp; Evans Pet—Peters Sned—Snead Spic—Spicer Ster—Sterling Ther—Thermoid UP—Universal Machine UP—Universal Products</p>	<p><b>Universal:</b> Acm—Acme Bear—Bearings Co. Bld—Blood Brothers Dit—Ditwiler Flex—Flexite Hart—Hartford KB—Kinsler-Bennett Mech—Mechanics M-E—Merchant &amp; Evans Pet—Peters Sned—Snead Spic—Spicer Ster—Sterling Ther—Thermoid UP—Universal Machine UP—Universal Products</p>	<p><b>Engine:</b> Beav—Beaver Cont—Continental GBS—Golden, Belknap &amp; Swartz Her—Hercules Hin—Hinkley HSp—Herschell-Spillman LeR—Le Roi Lib—Liberty LMF—Light Mfg. &amp; Fdy. Lyc—Lycoming Rut—Rutenber Ster—Sterling TC—Twin City Vict—Victory Wau—Waukesha Wei—Weidely Wis—Wisconsin</p>	<p><b>PT—Plain Tube</b> FIN—Fin Tube ZZT—Zig Zag Tube</p>	<p><b>Lubrication:</b> FS—Force and Splash F—Force Feed S—Splash</p>	<p><b>Carburetor:</b> B&amp;B—Ball &amp; Ball Bent—Bennett Cart—Carter Eag—Eagle Ens—Ensign Fleh—Fletcher Holl—Holley John—Johnson King—Kingston Mar—Marvel Mas—Master Mill—Miller Rayf—Rayfield Strm—Stromberg Shk—Shakespeare Sheb—Schebler Stew—Stewart Till—Tillotson Zen—Zenith</p>	<p><b>Fuel Feed:</b> G—Gravity P—Pressure V—Vacuum</p>	<p><b>Governor:</b> Con—Continental Del—Delaney Dup—Duplex Hin—Hinkley Mer—Merrill McC—McCanna Mon—Monarch Phar—Pharo Pier—Pierce Rug—Ruggles Sim—Simplex Wau—Waukesha</p>	<p><b>Universal:</b> Acm—Acme Bear—Bearings Co. Bld—Blood Brothers Dit—Ditwiler Flex—Flexite Hart—Hartford KB—Kinsler-Bennett Mech—Mechanics M-E—Merchant &amp; Evans Pet—Peters Sned—Snead Spic—Spicer Ster—Sterling Ther—Thermoid UP—Universal Machine UP—Universal Products</p>	<p><b>Ignition System:</b> Aer—Aero AtK—Atwater-Kent Aut—Auto-Lite Bos—Bosch Ber—Berling Con—Connecticut Del—Delco Dix—Dixie Eis—Eisemann Exi—Exide Kin—Kingsdon KW—K. W. Ignition Co. Lor—Lorraine NE—North East POL—Prest-O-Lite Rm—Remy Sim—Simms Spl—Splitdorf Wag—Wagner Wes—Westinghouse</p>	<p><b>Engine Starter:</b> AC—Allis-Chalmers AL—Auto-Lite Bj—Bijur DL—Delco Dy—Dyneto GD—Gray &amp; Davis LN—Leece-Neville NE—North East RE—Remy Wg—Wagner USL—U. S. L. W—Westinghouse</p>	<p><b>Gearset:</b> B-Li—Brown-Lipe Cott—Cotta Covt—Covet D-Sea—Driggs-Seabury Det—Detroit Dun—Dundore Durst—Durst Full—Fuller G-Le—Grant Lees MM—Mechanics Mach. Co Munc—Muncie Rock—Rockford Warn—Warner</p>	<p><b>Clutch (Make):</b> B. B—Borg &amp; Beck Det—Detlaft Full—Fuller D. G—Detroit Gear &amp; Mach. Hart—Hartford B-Li—Brown-Lipe M-E—Merchant &amp; Evans Munc—Muncie Covt—Covet War—Warner</p>	<p><b>Clutch (Type):</b> D—Disc C—Cone</p>	<p><b>Valve Arrangement:</b> H—Overhead L—ELL-Head T—TEE-Head S—Sleeve</p>	<p><b>How Cooled:</b> A—Air C—Centrifugal G—Gear Pump T—Thermo-Syphon</p>	<p><b>Radiator (Make):</b> BW—B &amp; W Brm—Brenem Bus—Bush Can—Candler Chic—Chicago EM—English-Mersick Eur—Eureka Fed—Fedders Flex—Flexo GO—G. &amp; O. Har—Harrison Hoo—Hooven Idl—Ideal Jam—Jamestown Kue—Kuenz Liv—Livingston Lng—Long McC—McCord May—Mayo Per—Perfex R-T—Rome-Turney Spar—Spartan Spec—Special Spi—Spirex Stan—Standard</p>	<p><b>Radiator (Type):</b> C—Cellular H—Honeycomb</p>	<p><b>Universal:</b> Acm—Acme Bear—Bearings Co. Bld—Blood Brothers Dit—Ditwiler Flex—Flexite Hart—Hartford KB—Kinsler-Bennett Mech—Mechanics M-E—Merchant &amp; Evans Pet—Peters Sned—Snead Spic—Spicer Ster—Sterling Ther—Thermoid UP—Universal Machine UP—Universal Products</p>	<p><b>Universal:</b> Acm—Acme Bear—Bearings Co. Bld—Blood Brothers Dit—Ditwiler Flex—Flexite Hart—Hartford KB—Kinsler-Bennett Mech—Mechanics M-E—Merchant &amp; Evans Pet—Peters Sned—Snead Spic—Spicer Ster—Sterling Ther—Thermoid UP—Universal Machine UP—Universal Products</p>
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# Commercial Car Specifications—Corrected Monthly

The Specifications, Chassis Prices, Etc., Are Corrected Each Month From Data Supplied Direct by the Makers. Gasoline Tractor-Trucks and Electric Commercial Cars Will be Found at the End of Gasoline Commercial Cars

See Also Replacement Table in "Service and Repair Departments." Truck Frame Dimensions Are Included in Replacement Table

(Where prices are not given it is because we have been unable to get them from authoritative sources)

\* An asterisk in front of the model name indicates that corrections have been made somewhere in the specifications since the previous month

Trade Name and Model	Chassis Price	ENGINE DETAILS										GEARSET		REAR AXLE		TIRES, WHEELS, RIMS				Chassis Weight	P.R. Cent of Weight on Rear Wheels																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
		Make and Model	Bore and Stroke	N. A. C. C.	Valve Arrang't	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	Make	Location	Speeds			Universal (Make)	Springs (Make)	Final Drive	Make	Type	Total Gear Ratio	Total Gear Ratio in High	Steering Gear	*Pneumatic Tires																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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Pony.....	.....	Own	2 1/4 x 4	12.1 L	L	T	McC	H	FS	Strm	G	.....	.....	Fr	AtK	.....	Own	U	3	.....	.....	Tut	C	Own	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....</

2050	International F.	Own F	33% 55%	19.6 L	C T	Own	Fin	FS	Holl	G	Own	Mon	Own	DP	Boe	Own	Own	U	A	3	UP	Own	Row	I	D	Own	30x3 1/2	36x4	3000 128.50
1500	Keystone I	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone II	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone III	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone IV	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone V	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone VI	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone VII	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone VIII	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone IX	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone X	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XI	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XII	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XIII	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XIV	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XV	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XVI	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XVII	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XVIII	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XIX	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XX	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XXI	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XXII	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XXIII	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XXIV	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XXV	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XXVI	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XXVII	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XXVIII	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XXIX	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XXX	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XXXI	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XXXII	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XXXIII	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XXXIV	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XXXV	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XXXVI	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XXXVII	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XXXVIII	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XXXIX	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XL	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XLI	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XLII	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XLIII	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XLIV	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XLV	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XLVI	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XLVII	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XLVIII	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone XLIX	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone L	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone LI	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone LII	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone LIII	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone LIV	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone LV	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone LVI	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone LVII	Own	33% 54	18.2 L	T	Per	Fin	S	Fill	V	Mon	Mon	Full	WP	Aul	AL	Full	U	U	3	Time	W	W	W	Ken	Timk	36x4	34x5	2040 130.85
2000	Keystone LVIII	Own	33% 54	18.2 L	T																								



Trade Name and Model	Chassis Price	ENGINE DETAILS										GEARSET			REAR AXLE		Tires, Wheels, Rims		Chassis Weight	Wheelbase	Pr. Cent of Weight on Rear Wheels																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
		Make and Model	Bore and Stroke	N. A. C. C.	Horsepower	Valve Arrangement	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	Make				Location	Speeds	Universal (Make)	Springs (Make)	Final Drive	Make	Type	Total Gear Reduction in High	Total Gear Reduction in Low	Steering Gear (Make)	Front	Rear	Wheels (Make)	Rim Equipment																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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Wolverine D.	33x15	22.5 L	T	Lang	F	FS	Strm	G	Mon	Full	DP	Eis	GD	Full	U	3 UP	Tut	II	Rus	D	10.2	30.8	33x15	34x5	Hay	Gdy	3400	140	77
Cont N	33x15	22.5 L	T	Lang	F	FS	Strm	G	Mon	Full	DP	Eis	GD	Full	U	3 UP	Tut	II	Rus	D	10.2	30.8	33x15	34x5	Hay	Gdy	3400	140	77



Trade Name and Model	Chassis Price	ENGINE DETAILS										GEARSET			REAR AXLE			TIRES, WHEELS, RIMS			Chassis Weight	Wheelbase	Pr. Cent of Weight on Rear Wheels																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
		Make and Model	Bore and Stroke	N. A. C. C.	Horsepower	Valve Arrangement	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	Make	Location	Speeds				Universal (Make)	Springs (Make)	Final Drive	Make	Type	Total Gear Reduction in High	Total Gear Reduction in Low	Steering Gear (Make)	Front		Rear		Wheels (Make)	Rim Equipment																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											

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Trade Name and Model	Chassis Price	ENGINE DETAILS										GEARSET			REAR AXLE			TIRES, WHEELS, RIMS			Chassis Weight	Wheelbase	Fr. Cent of Weight on Rear Wheels									
		Make and Model	Bore and Stroke	N. A. C. C.	Horsepower	Valve Arrange't	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	Make	Location	Speeds				Universal (Make)	Springs (Make)	Final Drive	Type	Total Gear Re-duction in High	Total Gear Re-duction in Low	Steering Gear (Make)	TIRES, WHEELS, RIMS	
																															*Pneumatic	*Dual
3 1/2 Ton—Con'd																																
G. M. C. 71A	4775	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	7540 163 75	Wheeldrums	36x5	40x5 1/2
G. M. C. 71B	4775	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	7655 187 75	Wheeldrums	36x5	40x5 1/2
Gramm-Bernstein 35	4775	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	8350 156 91.7	Wheeldrums	36x5	40x5 1/2
Hahn F.	3000	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	5900 65	Wheeldrums	36x5	40x5 1/2
Hal-Fur B.	4100	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	5000 65	Wheeldrums	36x5	40x5 1/2
Harvey W.H.A.	4200	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	6825 65	Wheeldrums	36x5	40x5 1/2
Hendrickson J.	4200	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	7700 160 80	Wheeldrums	36x5	40x5 1/2
Hewitt-Ludlow	4500	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	6300 156	Wheeldrums	36x5	40x5 1/2
Hurburt	4500	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	6400 156	Wheeldrums	36x5	40x5 1/2
Indiana 35	4500	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	7050 160 75	Wheeldrums	36x5	40x5 1/2
International L.	4500	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	7000 160 50	Wheeldrums	36x5	40x5 1/2
*Jackson B.	4500	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	7400 160 55	Wheeldrums	36x5	40x5 1/2
*Jumbo 35	4500	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	7600 165 75	Wheeldrums	36x5	40x5 1/2
Kalamazoo K.	4400	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	8000 160 80	Wheeldrums	36x5	40x5 1/2
Kelly-Springfield K-40	4650	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	7730 160 83	Wheeldrums	36x5	40x5 1/2
Kelly-Springfield K-41	4650	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	7700 160 80	Wheeldrums	36x5	40x5 1/2
Kelly-Springfield K-42	4650	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	7900 166 90	Wheeldrums	36x5	40x5 1/2
Kleber C	4900	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	8500 166 90	Wheeldrums	36x5	40x5 1/2
Larabee-Deyo L.	4500	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	6850 166	Wheeldrums	36x5	40x5 1/2
*Mack AC	4950	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	6175 172 70	Wheeldrums	36x5	40x5 1/2
*Master A.	4190	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	7070 172 70	Wheeldrums	36x5	40x5 1/2
*Master AL	4290	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	7000 168 72	Wheeldrums	36x5	40x5 1/2
*Master E.	4640	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	7200 194 72	Wheeldrums	36x5	40x5 1/2
*Master EL	4740	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	7200 194 72	Wheeldrums	36x5	40x5 1/2
*Memphis G.	4270	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	6000 160 80	Wheeldrums	36x5	40x5 1/2
*Nelson & LeMoon F3 1/2	4270	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	6000 160 80	Wheeldrums	36x5	40x5 1/2
*Northway B3.	4250	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	6000 160 80	Wheeldrums	36x5	40x5 1/2
*O.K. 3 1/2 T.	4250	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	6000 160 80	Wheeldrums	36x5	40x5 1/2
*Old Reliable C.	4350	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	6250 170 75	Wheeldrums	36x5	40x5 1/2
*Orleans C.	3900	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	6250 170 75	Wheeldrums	36x5	40x5 1/2
*Paige 51-18	4385	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	6250 170 75	Wheeldrums	36x5	40x5 1/2
*Parker 120	3845	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	6250 170 75	Wheeldrums	36x5	40x5 1/2
*Powers C.	4200	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	6250 170 75	Wheeldrums	36x5	40x5 1/2
*Reynolds 7A	4325	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	6250 170 75	Wheeldrums	36x5	40x5 1/2
*Sandoz M.	4285	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	6250 170 75	Wheeldrums	36x5	40x5 1/2
*Sanford W35	4275	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	6250 170 75	Wheeldrums	36x5	40x5 1/2
*Schaech	4325	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19	20	21	22	23	6250 170 75	Wheeldrums	36x5	40x5 1/2
*Selden 3 1/2 A.	4285	Cont E4	4 1/2 x 6	32.4	25.6	L	McC	Fin	Mar	G	V	Mon	9	10	11	Eis	12	13	14	15	16	17	18	19								

4975	*Moreland 20G.	Cont B2	Wau EU	Fin	Fin	FS	Mas	G	Con	Own	DD	Dix	W	Own	A	4	Ther	US	W	Timk	40x51	36x55	7.8	37.7	Ros	7810
4700	Riker BB.	Wau EU	Fin	Fin	FS	FS	BB	G	Con	Own	DD	Ber	W	Own	A	4	Ther	US	W	Timk	36x51	36x55	10	42.5	Ros	7200
4850	Rowe HW.	Wau EU	Fin	Fin	FS	FS	Zen	G	Con	Own	DD	Ber	W	Own	A	4	Ther	US	W	Timk	36x51	36x55	8.7	35	Ros	6370
4900	Schwartz DWS	Buda YU	Fin	Fin	FS	FS	Strm	G	Con	Own	DD	Ber	W	Own	A	4	Ther	US	W	Timk	36x51	36x55	12	72	Ros	7700
4600	Schwartz DW.	Buda YU	Fin	Fin	FS	FS	Strm	G	Con	Own	DD	Ber	W	Own	A	4	Ther	US	W	Timk	36x51	36x55	12	72	Ros	7700
4600	Schwartz DWL	Buda YU	Fin	Fin	FS	FS	Strm	G	Con	Own	DD	Ber	W	Own	A	4	Ther	US	W	Timk	36x51	36x55	12	72	Ros	7700
3975	*Union H.	Wau EU	Fin	Fin	FS	FS	Strm	G	Con	Own	DD	Ber	W	Own	A	4	Ther	US	W	Timk	36x51	36x55	10.25	54.8	Lav	7600
4595	*U.S. S.	Spec 2H	Wau EU	Fin	Fin	FS	Strm	G	Con	Own	DD	Ber	W	Own	A	4	Ther	US	W	Timk	36x51	36x55	10.25	54.8	Lav	7600
4000	Ware A.	Spec 2H	Wau EU	Fin	Fin	FS	Strm	G	Con	Own	DD	Ber	W	Own	A	4	Ther	US	W	Timk	36x51	36x55	10.25	54.8	Lav	7600
5150	*Acson M.	Wau EU	Fin	Fin	FS	FS	Shel	V	Wau	Own	DD	Eis	W	Own	A	4	Ther	US	W	Timk	40x51	36x55	10.25	53.3	Ros	8350
5150	*Acme E.	Cont B2	Wau EU	Fin	Fin	FS	Shel	V	Wau	Own	DD	Eis	W	Own	A	4	Ther	US	W	Timk	40x51	36x55	10.25	53.3	Ros	8350
5975	Aterbury BE.	Cont B2	Wau EU	Fin	Fin	FS	Shel	V	Wau	Own	DD	Eis	W	Own	A	4	Ther	US	W	Timk	40x51	36x55	10.25	53.3	Ros	8350
5250	Available BG.	Cont B2	Wau EU	Fin	Fin	FS	Shel	V	Wau	Own	DD	Eis	W	Own	A	4	Ther	US	W	Timk	40x51	36x55	10.25	53.3	Ros	8350
5500	Brookway D.	Cont B2	Wau EU	Fin	Fin	FS	Shel	V	Wau	Own	DD	Eis	W	Own	A	4	Ther	US	W	Timk	40x51	36x55	10.25	53.3	Ros	8350
5500	Chicago D.	Cont B2	Wau EU	Fin	Fin	FS	Shel	V	Wau	Own	DD	Eis	W	Own	A	4	Ther	US	W	Timk	40x51	36x55	10.25	53.3	Ros	8350
5500	Chrysdote 120B.	Cont B2	Wau EU	Fin	Fin	FS	Shel	V	Wau	Own	DD	Eis	W	Own	A	4	Ther	US	W	Timk	40x51	36x55	10.25	53.3	Ros	8350
5500	Cont AA.	Cont B2	Wau EU	Fin	Fin	FS	Shel	V	Wau	Own	DD	Eis	W	Own	A	4	Ther	US	W	Timk	40x51	36x55	10.25	53.3	Ros	8350
6700	*Day 200.	Cont B2	Wau EU	Fin	Fin	FS	Shel	V	Wau	Own	DD	Eis	W	Own	A	4	Ther	US	W	Timk	40x51	36x55	10.25	53.3	Ros	8350
4950	Buda YU	Cont E7	Wau EU	Fin	Fin	FS	Shel	V	Wau	Own	DD	Eis	W	Own	A	4	Ther	US	W	Timk	40x51	36x55	10.25	53.3	Ros	8350
5350	*Diamond TS.	Cont E7	Wau EU	Fin	Fin	FS	Shel	V	Wau	Own	DD	Eis	W	Own	A	4	Ther	US	W	Timk	40x51	36x55	10.25	53.3	Ros	8350
5675	*Diamond TS.	Cont E7	Wau EU	Fin	Fin	FS	Shel	V	Wau	Own	DD	Eis	W	Own	A	4	Ther	US	W	Timk	40x51	36x55	10.25	53.3	Ros	8350

**51½, 6 and 7 Ton**

Aetna 160.....  
Available H7.....  
\*Bridgeport 6D.....  
Couple Gear LD6.....  
Doane 6.....



Trade Name and Model	Chassis Price	ENGINE DETAILS										GEARSET		REAR AXLE		Steering Gear (Make)	TIRES, WHEELS, RIMS		Chassis Weight	Wheelbase	Pr. Cent of Weight on Rear Wheels																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
		Make and Model	Bore and Stroke	N. A. C. C.	Valve Arrangement	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System		Engine Starter	Make				Location	Speeds	Universal (Make)	Springs (Make)	Final Drive	Make	Type	Total Gear Reduction in High	Total Gear Reduction in Low	Front	Rear	Wheels (Make)	Rim Equipment																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
5 1/2, 6, 7 Ton Con'd		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
*Garford 68.....	5100	Wis JU	5 1/2x5 1/2	41.6 T	28.9 L	4	Fin	Fin	Fin	FS	Rayf	G	Sim	B-Li	DD	Eis	W	Own	D	11	40.7	Ros	36x6	40x7 1/2	Smf	23	9350	128	60																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
*Hall.....	5500	Cont E4	4 1/2x5 1/2	32.4 T	28.9 L	4	Fin	Fin	Fin	FS	Zen	G	Dup	B-Li	DD	Eis	W	Own	D	12	45.2	Ros	36x6	40x7 1/2	Smf	23	7630	Op	60																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
*Kelley-Springfield K60.....	5500	Wis RBU	5 x6	40 L	32.4 T	4	Fin	Fin	Fin	FS	Zen	G	Pier	B-Li	DD	Eis	W	Own	D	12	45.2	Ros	36x6	40x7 1/2	Smf	23	7630	Op	60																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
*Macaco AC.....	5750	Wau AC	5 x6	40 L	32.4 T	4	Fin	Fin	Fin	FS	Zen	G	Pier	B-Li	DD	Eis	W	Own	D	12	45.2	Ros	36x6	40x7 1/2	Smf	23	8750	Op	60																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
*Macaco AC.....	6000	Wau AC	5 x6	40 L	32.4 T	4	Fin	Fin	Fin	FS	Zen	G	Pier	B-Li	DD	Eis	W	Own	D	12	45.2	Ros	36x6	40x7 1/2	Smf	23	8750	Op	60																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
*Old Reliable K, L, M.....	6250	Wau AC	4 1/2x6 1/2	36.1 L	32.4 T	4	Fin	Fin	Fin	FS	Zen	G	Pier	B-Li	DD	Eis	W	Own	D	12	45.2	Ros	36x6	40x7 1/2	Smf	23	9050	Op	60																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
*Royal 6.....	6600	Wau AC	4 1/2x6 1/2	36.1 L	32.4 T	4	Fin	Fin	Fin	FS	Zen	G	Pier	B-Li	DD	Eis	W	Own	D	12	45.2	Ros	36x6	40x7 1/2	Smf	23	10240	Op	60																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
*Sterling 7 1/2-Chain.....	6600	Wau AC	4 1/2x6 1/2	36.1 L	32.4 T	4	Fin	Fin	Fin	FS	Zen	G	Pier	B-Li	DD	Eis	W	Own	D	12	45.2	Ros	36x6	40x7 1/2	Smf	23	10240	Op	60																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
*Tiffin 6.....	5450	Cont B2	5 x6 1/2	40 L	32.4 T	4	Fin	Fin	Fin	FS	Zen	G	Pier	B-Li	DD	Eis	W	Own	D	12	45.2	Ros	36x6	40x7 1/2	Smf	23	9000	Op	60																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
*Winchita S.....	5000	Beav JB	4 1/2x6	32.4 L	32.4 T	4	Fin	Fin	Fin	FS	Zen	G	Pier	B-Li	DD	Eis	W	Own	D	12	45.2	Ros	36x6	40x7 1/2	Smf	23	9000	Op	60																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
*Winther 140.....	5900	Wis RBU	5 x6	40 L	32.4 T	4	Fin	Fin	Fin	FS	Zen	G	Pier	B-Li	DD	Eis	W	Own	D	12	45.2	Ros	36x6	40x7 1/2	Smf	23	9600	Op	60																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
<b>Gasoline Tractor-Trucks</b>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														

# Manufacturers Whose Models Are Included in Specifications on Preceding Pages

Acason—Acason Motor Truck Co., Detroit, Mich.  
 Ace—American Motor Truck Co., Newark, Ohio.  
 Acme—Acme Motor Truck Co., Cadillac, Mich.  
 Aetna—Aetna Motors Corp. of N. Y., New York, N. Y.  
 All-American—All-American Truck Co., Chicago, Ill.  
 All-Power—All-Power Truck Co., Detroit, Mich.  
 American—American Motor Truck & Tractor Co., New York, N. Y.  
 Apex—Hamilton Motor Co., Grand Haven, Mich.  
 Armleder—O. Armleder Co., Cincinnati, Ohio.  
 Atco—American Truck & Trailer Corp., Kankakee, Ill.  
 Atlantic—Atlantic Electric Vehicle Co., Newark, N. J.  
 Atlas—Atlas Truck Corp., York, Pa.  
 Atterbury—Atterbury Motor Car Co., Buffalo, N. Y.  
 Autocar—Autocar Co., Ardmore, Pa.  
 Available—Available Truck Co., Chicago, Ill.  
 Beck-Hawkeye—Beck-Hawkeye Motor Truck Works, Cedar Rapids, Iowa.  
 Bell—Iowa Motor Truck Co., Ottumwa, Ia.  
 Belmont—Belmont Motors Corp., Lewistown, Pa.  
 Bessemer—Bessemer Motor Truck Co., Grove City, Pa.  
 Bethlehem—Bethlehem Motor Truck Corp., Allentown, Pa.  
 Betz—Betz Motor Truck Co., Hammond, Ind.  
 Birch—Birch Motor Cars, Chicago, Ill.  
 Bridgeport—Bridgeport Motor Truck Co., Bridgeport, Conn.  
 Brinton—Brinton Motor Truck Co., Philadelphia, Pa.  
 Brockway—Brockway Motor Truck Co., Cortland, N. Y.  
 C. T.—Commercial Truck Co., Philadelphia, Pa.  
 Capitol—Capitol Motors Corp., Fall River, Mass.  
 Chevrolet—Chevrolet Motor Co. of Mich., Flint, Mich.  
 Chicago—Chicago Motor Truck, Inc., Chicago, Ill.  
 Climber—Climber Motor Corp., Little Rock, Ark.  
 Clydesdale—Clydesdale Motor Truck Co., Clyde, Ohio.  
 Collier—Collier Motor Truck Co., Bellevue, Ohio.  
 Columbia—Columbia Motor Truck & Trailer Co., Pontiac, Mich.  
 Comet—Comet Automobile Co., 156 S. Water St., Decatur, Ill.  
 Commerce—Commerce Motor Car Co., Detroit, Mich.  
 Concord—Abbot-Downing Truck & Body Co., Concord, N. H.  
 Conestoga—Conestoga Motor Truck Co., Lancaster, Pa.  
 Cook—Cook Motors Corp., Kankakee, Ill.  
 Corbitt—Corbitt Motor Truck Co., Henderson, N. C.  
 Couple Gear—Couple Gear Freight Wheel Co., Grand Rapids, Mich.  
 Dart—Dart Truck & Tractor Corp., Waterloo, Ia.  
 Day-Elder—Day-Elder Motors Corp., Newark, N. J.  
 Dearborn—Dearborn Truck Co., Chicago, Ill.  
 Defiance—Defiance Motor Truck Co., Defiance, Ohio.  
 DeKalb—DeKalb Wagon Co., DeKalb, Ill.  
 Denby—Denby Motor Truck Co., Detroit, Mich.  
 Dependable—Dependable Truck & Tractor Co., Galesburg, Ill.  
 Diamond T—Diamond T Motor Car Co., Chicago, Ill.  
 Diehl—Diehl Motor Truck Works, Philadelphia, Pa.  
 Doane—Doane Motor Truck Co., San Francisco, Cal.  
 Dodge—Dodge Bros., Detroit, Mich.  
 Dorris—Dorris Motor Car Co., St. Louis, Mo.  
 Double Drive—Double Drive Truck Co., Chicago, Ill.  
 Douglas—Douglas Motors Corp., Omaha, Nebr.  
 Duplex—Duplex Truck Co., Lansing, Mich.  
 Duryea—Duryea Motors, Inc., Philadelphia, Pa.  
 Duty—Duty Motor Co., Greenville, Ill.  
 Eagle—Eagle Motor Truck Corp., St. Louis, Mo.  
 Ellsworth—Mills-Ellsworth Co., Keokuk, Ia.  
 Elmira—Elmira Commercial Motor Car Co., Inc., Owego, N. Y.  
 Erie—Erie Motor Truck Mfg. Co., Erie, Pa.  
 F. W. D.—Four Wheel Drive Auto Co., Clintonville, Wis.  
 Fageol—Fageol Motors Co., Oakland, Cal.  
 Famous—Famous Trucks, Inc., St. Joseph, Mich.  
 Fargo—Fargo Motor Truck Co., Chicago, Ill.  
 Federal—Federal Motor Truck Co., Detroit, Mich.  
 Ford—Ford Motor Co., Highland Park, Mich.  
 Forscher—Forscher Motor Truck Mfg. Co., New Orleans, La.  
 Front Drive—Double Drive Truck Co., Chicago, Ill.  
 Fulton—Fulton Motors Corp., New York, N. Y.  
 G. M. C.—General Motors Truck Co., Pontiac, Mich.  
 G. W. W.—Wilson Truck Mfg. Co., Henderson, Ia.  
 Garford—Garford Motor Truck Co., Lima, Ohio.  
 Gary—Gary Motor Truck Co., Gary, Ind.  
 Gersix—Gersix Mfg. Co., Seattle, Wash.  
 Giant—Giant Truck Corp., Chicago Heights, Ill.  
 Graham—Graham Brothers, Evansville, Ind.  
 Gramm-Bernstein—Gramm-Bernstein Motor Truck Co., Lima, Ohio.  
 Grant—Grant Motor Car Corp., Truck Division, Cleveland, Ohio.  
 Hahn—Hahn Motor Truck & Wagon Co., Hamburg, Pa.  
 Hal-Fur—Hal-Fur Motor Truck Co., Cleveland, Ohio.  
 Hall—Lewis-Hall Motors Corp., Detroit, Mich.  
 Harvey—Harvey Motor Truck Co., Harvey, Ill.  
 Hawkeye—Hawkeye Truck Co., Sioux City, Ia.  
 Hendrickson—Hendrickson Motor Truck Co., Chicago, Ill.  
 Hewitt-Ludlow—Ralston Iron Works, San Francisco, Cal.  
 Highway-Knight—Highway Motors Co., Chicago, Ill.  
 Higrade—Higrade Motors Co., Harbor Springs, Mich.  
 H & M—H & M Motor Truck Co., Inc., Baltimore, Md.  
 Hood—Hood Mfg. Co., Seattle, Wash.  
 Hoover—Hoover Wagon Co., York, Pa.  
 H. R. L.—H. R. L. Motor Co., Seattle, Wash.  
 Huffman—Huffman Bros. Co., Elkhart, Ind.  
 Hurlburt—Harrisburg Mfg. & Boiler Co., Harrisburg, Pa.  
 Independent—Independent Motor Co., Youngstown, O.  
 Independent—Independent Motor Truck Co., Inc., Davenport, Ia.  
 Indiana—Indiana Truck Corp., Marion, Ind.  
 International—International Harvester Co., Chicago, Ill.  
 Jackson—Jackson Motors Corp., Jackson, Mich.  
 Jumbo—Nelson Motor Truck Co., Saginaw, Mich.  
 Kalamazoo—Kalamazoo Motor Corp., Kalamazoo, Mich.  
 Kankakee—Kankakee Automobile Co., Kankakee, Ill.  
 Karavan—Caravan Motors Co., Portland, Ore.  
 Kearns—Kearns-Duglie Motors Co., Beavertown, Pa.  
 Keldon—House Cold Tire Setter Co., St. Louis, Mo.  
 Kelly-Springfield—Kelly-Springfield Motor Truck Co., Springfield, Ohio.  
 Keystone—Keystone Motor Truck Corp., Philadelphia, Pa.  
 Kimball—Kimball Motor Truck Co., Los Angeles, Cal.  
 King Zeitler—King Zeitler Co., Chicago, Ill.

Kissel—Kissel Motor Car Co., Hartford, Cal.  
 Kleiber—Kleiber & Co., Inc., San Francisco, Cal.  
 Knox—Knox Motors Co., Springfield, Mass.  
 Koehler—H. J. Koehler Motors Corp., Bloomfield, N. J.  
 Kuhn—Kuhn Tractor Truck Co., Seattle, Wash.  
 Lange—Lange Motor Truck Co., Pittsburgh, Pa.  
 Larrabee-Deyo—Larrabee-Deyo Motor Truck Co., Inc., Binghamton, N. Y.  
 L. M. C.—Louisiana Motor Car Co., Shreveport, La.  
 Lombard—Lombard Auto Tractor Truck Corp., New York, N. Y.  
 Lone Star—Lone Star Truck & Tractor Assn., San Antonio, Texas.  
 Luedinghaus—Luedinghaus-Espenschied Wagon Co., St. Louis, Mo.  
 Luverne—Luverne Automobile Co., Luverne, Minn.  
 Maccar—Maccar Truck Co., Scranton, Pa.  
 MacDonald—MacDonald Truck & Tractor Co., San Francisco, Cal.  
 Mack—International Motor Co., New York, N. Y.  
 Marshall—Marshall Mfg. Co., Chicago, Ill.  
 Master—Master Trucks, Inc., Chicago, Ill.  
 Maxwell—Maxwell Motor Co., Inc., Detroit, Mich.  
 Menominee—Menominee Motor Truck Co., Menominee, Mich.  
 Moreland—Moreland Motor Truck Co., Los Angeles, Cal.  
 Muskegon—Muskegon Engine Co., Muskegon, Mich.  
 Mutual—Mutual Truck Co., Sullivan, Ind.  
 Napoleon—Napoleon Motors Co., Traverse City, Mich.  
 Nash—Nash Motors Co., Kenosha, Wis.  
 Nelson-LeMoon—Nelson & LeMoon, Chicago, Ill.  
 Netco—New England Truck Co., Fitchburg, Mass.  
 Niles—Niles Motor Truck Co., Pittsburgh, Pa.  
 Noble—Noble Motor Truck Co., Kendallville, Ind.  
 Northway—Northway Motors Co., Natick, Mass.  
 Northwestern—Starr Carriage Co., Seattle, Wash.  
 Norwalk—Norwalk Motor Car Co., Martinsburg, W. Va.  
 O. K.—Oklahoma Auto Mfg. Co., North Muskogee, Okla.  
 Ogden—Ogden Motor & Supply Co., Chicago, Ill.  
 Old Hickory—Kentucky Wagon Mfg. Co., Louisville, Ky.  
 Old Reliable—Old Reliable Motor Truck Co., Chicago, Ill.  
 Oldsmobile—Olds Motor Works, Lansing, Mich.  
 Oneida—Oneida Motor Truck Co., Green Bay, Wis.  
 Orleans—New Orleans Motor Truck Mfg. Co., New Orleans, La.  
 Oshkosh—Oshkosh Motor Truck Mfg. Co., Oshkosh, Wis.  
 Packard—Packard Motor Car Co., Detroit, Mich.  
 Paige—Paige-Detroit Motor Car Co., Detroit, Mich.  
 Parker—Parker Motor Truck Co., Milwaukee, Wis.  
 Patriot—Patriot Motors Co., Lincoln, Neb.  
 Pierce-Arrow—Pierce-Arrow Motor Car Co., Buffalo, N. Y.  
 Pioneer—Pioneer Truck Co., Chicago, Ill.  
 Pittsburgher—Pittsburgh Truck Mfg. Co., Pittsburgh, Pa.  
 Pony—Minnesota Machinery & Foundry Co., Minneapolis, Minn.  
 Power—Power Truck & Tractor Co., Detroit, Mich.  
 Rainier—Rainier Motor Corp., Flushing, L. I., N. Y.  
 Reliance—Reliance Motor Truck Co., Appleton, Wis.  
 Rennoc—Rennoc-Leslie Motor Co., Philadelphia, Pa.  
 Reo—Reo Motor Car Co., Lansing, Mich.  
 Republic—Republic Motor Truck Co., Inc., Alma, Mich.  
 Reynolds—Reynolds Motor Truck Co., Mt. Clemens, Mich.  
 Riker—Locomobile Co. of America, Bridgeport, Conn.  
 Rowe—Rowe Motor Mfg. Co., Lancaster, Pa.  
 Royal—Royal Motor Truck of N. Y., New York, N. Y.  
 Sandow—Sandow Motor Truck Co., Chicago, Ill.  
 Sanford—Sanford Motor Truck Co., Syracuse, N. Y.  
 Schacht—G. A. Schacht Motor Truck Co., Cincinnati, O.  
 Schwartz—Schwartz Motor Truck Co., Reading, Pa.  
 Selden—Selden Truck Corp., Rochester, N. Y.  
 Seneca—Seneca Motor Car Co., Fostoria, O.  
 Service—Service Motor Truck Co., Wabash, Ind.  
 Shaw—Walden W. Shaw Livery Co., Chicago, Ill.  
 Signal—Signal Motor Truck Co., Detroit, Mich.  
 Southern—Southern Truck & Car Corp., Greenboro, N. C.  
 Standard—Standard Motor Truck Co., Detroit, Mich.  
 Steinmetz—Steinmetz Electric Motor Car Corp., Baltimore, Md.  
 Sterling—Sterling Motor Truck Co., Milwaukee, Wis.  
 Stewart—Stewart Motor Corp., Buffalo, N. Y.  
 Stoughton—Stoughton Wagon Co., Stoughton, Wis.  
 Success—Webberville Truck Co., Webberville, Mich.  
 Sullivan—Sullivan Motor Truck Co., Rochester, N. Y.  
 Superior—Superior Motor Truck Co., Atlanta, Ga.  
 Texan—Texas Motor Car Asso., Fort Worth, Texas.  
 Tiffin—Tiffin Wagon Co., Tiffin, Ohio.  
 Titan—Titan Truck Co., Milwaukee, Wis.  
 Tower—Tower Motor Truck Co., Greenville, Mich.  
 Traffic—Traffic Motor Truck Corp., St. Louis, Mo.  
 Transport—Transport Truck Co., Mt. Pleasant, Mich.  
 Traylor—Traylor Eng. & Mfg. Co., Cornwells, Pa.  
 Triangle—Triangle Motor Truck Co., St. Johns, Mich.  
 Triumph—Triumph Truck & Tractor Co., Kansas City, Mo.  
 Twin City F. W. D.—Twin City Four Wheel Drive Co., Inc., St. Paul, Minn.  
 Twin City—Minneapolis Steel & Mach. Co., Minneapolis, Minn.  
 Ultimate—Vreeland Motor Co., Inc., Newark, N. J.  
 Union—Union Motor Truck Co., Bay City, Mich.  
 United—United Motors Co., Grand Rapids, Mich.  
 U. S.—United States Motor Truck Co., Cincinnati, Ohio.  
 Velle—Velle Motors Corp., Moline, Ill.  
 Victor—Victor Motor Truck & Trailer Co., Chicago, Ill.  
 Vim—Vim Motor Truck Co., Philadelphia, Pa.  
 Walker—Walker Vehicle Co., Chicago, Ill.  
 Walker-Johnson—Walker-Johnson Truck Co., Woburn, Mass.  
 Walter—Walter Motor Truck Co., New York, N. Y.  
 Ward—Ward Motor Vehicle Co., Mt. Vernon, N. Y.  
 Ward La France—Ward La France Truck Co., Inc., Elmira, N. Y.  
 Ware—Ware Twin Engine Truck Co., Minneapolis, Minn.  
 Watson—Watson Wagon Co., Canastota, N. Y.  
 Wells—Evans Truck & Axle Co., Auburn, Ind.  
 White—White Co., Cleveland, Ohio.  
 White Hickory—White Hickory Motor Corp., Atlanta, Ga.  
 Wichita—Wichita Falls Motor Co., Wichita Falls, Tex.  
 Wilcox—H. E. Wilcox Motor Co., Minneapolis, Minn.  
 Wilson—J. C. Wilson Co., Detroit, Mich.  
 Winther—Winther Motor Truck Co., Kenosha, Wis.  
 Witt-Will—Witt-Will Co., Inc., Washington, D. C.  
 Wolverine—American Commercial Car Co., Detroit, Mich.

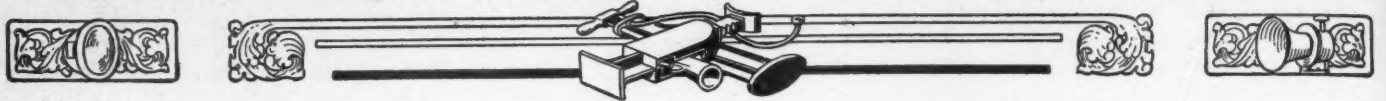




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# TRUCK EQUIPMENT AND APPLIANCES



## Supreme Introduces New Engine Models

ONE of the new productions of the Supreme Motors Corporation, Warren, Ohio, the model S-4 engine, is fitted for installation on trucks of from  $\frac{3}{4}$  to  $1\frac{1}{2}$  tons capacity, and also for installation in passenger cars. The other model, known as 5-K, a six-cylinder, cast-in-block engine, is for passenger car installation only. Special attention was given in designing both models, that all parts may be adjusted or repaired with minimum delay or cost. All parts easily accessible; the timing gears, by removal of gear-case cover, which also permits the withdrawal of camshaft as its bearings are slightly larger in diameter than the cams. The removable cylinder head gives access to valves, combustion chamber and water jackets. Tappets and their guides can be removed without removing camshaft or valves which is a great convenience. Pistons and connecting rods may be withdrawn without disturbing crankshaft or removing engine from chassis, by simply taking off oil pan.

The four-cylinder, cast-in-block model S-4 engine has a bore and stroke of  $3\frac{3}{8}$  in. x 5 in., respectively and has a N. A. C. C. rating of 18.2 hp. The cylinders are cast integral with the upper half of the crankcase and the bores are ground to standard limits to provide interchangeability of pistons. To minimize the side thrust of the pistons on cylinder walls during compression and power strokes the cylinders are offset. The cylinder head is detachable. Ample water space around the cylinders, valve seats, ports, combustion chamber and spark plug bosses, insuring freedom of circulation and temperature, is provided.

The intake manifold is cast integral with the cylinder block and crossed between the second and third cylinders to the right side of the engine. A hot-air stove and tube leading through the cylinder block to a point directly below the carburetor is furnished so that only a short connection to the carburetor is necessary. The exhaust manifold is a separate casting secured to the cylinder block on the left or valve side of the engine. The intake manifold is free from sharp corners and has shortest direct route to cylinders.

The oil pan is formed of pressed steel and contains a large unmovable oil strainer in the pan tray. The outer rim of the semi-steel cast flywheel has teeth for an electric starter pinion. The cast-iron flywheel housing is bolted and doubled to crankcase with integral rear engine support arms. The helically cut timing gears are three in number and are entirely enclosed in front of the engine.

The three-bearing crankshaft is drop forged from high-grade steel and the camshaft and cams are steel heat treated and drop-forged in one piece. Bearings are ground.

The connecting rods are steel, drop-forgings, heat treated of the conventional "I" beam section. Upper bushing is of bronze. All camshaft, crankshaft and connecting rod crank-pin bearings are fitted with high-grade babbitt backed with bronze bushings. Adjustments are made by use of laminated sheet-brass shims. Each of the cast gray iron pistons is fitted with three rings located above the pin. The lower ring groove is drilled to return the oil which is pumped by the skirt of the piston. The rings are one-piece, cast-iron, concentric expansion and diagonally split, manufactured of the same grade iron as the pistons. The tubular steel, hardened and ground piston rings are held stationary in the piston by a screw, which is locked by a nut and a mild steel stamping bent up against the flat side of the nut and screw head.

The valve mechanism parts are entirely enclosed and mechanically operated by a single camshaft. Exhaust and inlet valves are interchangeable and their stems and seats are accurately ground to size. The heads are nickel steel, electrically welded to carbon-steel stems with hardened ends to resist wear against the action of tappets, thus eliminating frequent adjustment. The tappets are of the mushroom type, extra light in weight, made of steel, hardened and ground. Special oil-tempered valve

springs are used and held in position by a substantial, reliable spring cup and retainer. The valve mechanism is protected from dust and dirt by cast aluminum covers, which are easily removed or replaced, each being held in place by a special nut on a stud.

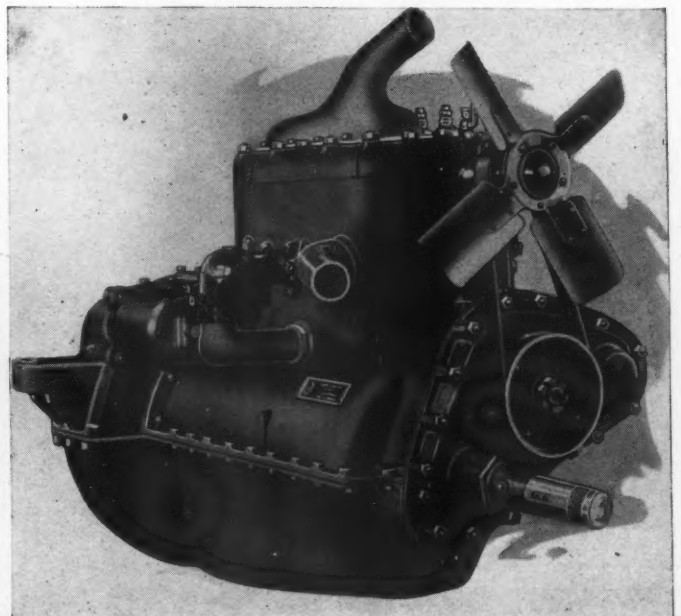
The lubrication is a self-contained positive full-pressure feed system. A special internal-gear oil-pump is attached as a separate unit to an accessible point outside of the engine. A pressure-regulating valve is located on the pump, which permits the pressure to be readily adjusted from outside for different grades of oil and temperature. The pump is driven by gears off the rear end of camshaft.

Oil is fed by pressure through the hollow camshaft, which acts as the oil-distributing conduit. This hollow camshaft is a special feature of this engine. The camshaft is drilled to conduct oil to its three bearings and also feed oil through drilled holes to each of the three main crankshaft bearings. The crankshaft is drilled from each main bearing to each adjacent connecting rod bearing to conduct oil to the four connecting-rod lower bearings; a thin film of oil sprayed from main and connecting-rod bearings, lubricated the pistons, piston rings, cam and valve mechanism. The timing gears are lubricated by a separate oil tube leading into top of timing gear case, and the surplus oil returns to the oil reservoir.

The oil pan is of generous size designed so that plenty of oil is always at the suction end of the oil pump tube on any negotiable grade thus insuring posi-

**Showing the Right or Carburetor Side of the Supreme Engine.**

The lower water connection and the starting motor are clearly disclosed.



tive circulation at all times. Provision is also made for connecting a gage which can be mounted on the dashboard. The amount of oil in oil reservoir is determined by a removable bayonet blade type indicator, on which is marked oil level in quarters. This is inserted into the oil reservoir, just forward of the engine rear, right, support arm.

This model is cooled by the thermo-

syphon system and the inlet casting can be adjusted for variable angles. Cooling can be assisted by a fan mounted on an adjustable lever. An endless belt may be installed without removing any part of the engine. Fan-drive pulley is attached to forward end of camshaft.

Provision is made for optional mounting of generator with or without ignition distributor drive. The independent dis-

tributor drive is off the forward end of the camshaft.

Installation is designed for three-point suspension. Two points on side of bell housing and third point on the forward end of timing gear cover, which is a bearing of ample size. This permits the third point to be carried in a split or solid bearing on frame front cross member or a front suspension cross beam.

## Weidely Engine for Speed Trucks

**T**HE new four-cylinder engine, Model M. A. T., of the Weidely Motors Co., Indianapolis, Ind., is an outgrowth of the earlier Model M. and M. A. designs with the exception that it is adapted for either a truck or passenger car. It is particularly designed to meet the demands essential for efficient speed wagon service. It is provided with a three-point suspension.

The four cylinders are cast integral with the upper half of the crankcase, from a mixture of gray iron. The heads, containing the valves, also intake and exhaust ports, are removable, and are fastened to the cylinders by ten large-size nickel steel studs. Each piston has three rings. The connecting rods are of alloy steel forgings, heat-treated. The end into which the wrist pin fits is lined with a bronze bushing, while the crankshaft has a large babbit-lined brass bearing, which is adjustable by laminated shims and four nickel steel bolts.

The three-bearing crankshaft is drop-forged of a special steel, heat-treated and accurately machined. The flange for mounting the flywheel is forged integral with the crankshaft. By means of an adjusting nut on the front, end play may be taken up, and large flanges on each side of the bearings permit the clutch thrust to be taken up.

The crankshaft, which is mounted in three phosphor-bronze bearings, is drop-forged, of case-hardening steel, with integral cams. The bearings are slightly larger than the cams to allow easy withdrawal from the bearings.

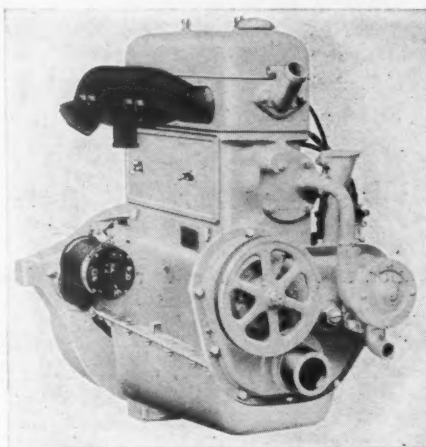
All main and connecting rod bearings are made of bronze, lined with babbit metal, and are provided with the necessary oil grooves to insure proper lubrication. These bearings are split and are adjustable by laminated brass shims. The timing gears are wide face and helically cut. Their lubrication is insured by a relief valve in the oiling system, that overflows onto the timing gears.

The valve tappets are of the mushroom type. They are of tubular construction and have a large diameter. A large removable pressed steel plate with oil-tight felt gasket protects the valve tappets from dust and dirt.

The cast iron intake and exhaust manifolds are cast integral. This unit is fastened to the engine head by means of studs, and is provided with copper covered asbestos gaskets. The water-circulating pump is on the left side in front

of the gear case cover, being a convenient location for connection to the radiator spud. The pump impeller and shaft are of bronze. A patented design of pump packing is used, it being a series of graphite packing washers, properly tapered and self-adjusting.

The force-feed system of lubrication is



**Weidely Bulldog Engine**

Made for operating at higher speeds without sacrificing strength

utilized. The oil pump mounted on the rear of the engine is directly driven by the camshaft. The oil is forced through a tubular header to the three main bearings, and through a hollow camshaft to the connecting rod bearings, also through holes drilled in the webs of the upper half of the crankcase to the camshaft bearings. A gage strainer is fitted around the oil pump suction to keep out sand or grit. The pressure relief valve is placed in the gear case in front of the motor, this lubricating the timing gears, and an oil gage bolted on the side of the crankcase indicates by means of a float the amount of oil contained in the oil basin.

The following are its specifications:

Bore  $3\frac{3}{4}$  in., stroke  $5\frac{1}{2}$  in., piston displacement of 243 cu. in., crankshaft main bearing, rear  $2\frac{1}{8} \times 4$  in.; crankshaft main bearing, front and center,  $2\frac{1}{8} \times 2\frac{1}{2}$  in.; connecting rod bearing,  $2 \times 2\frac{1}{4}$  in.; wrist pin bearing, 1 in.; diameter of valves in clear, 1 13-16 in.; total weight, 700 lb.; hp., S. A. E. rating, 22.5; bell housing No. 3, S. A. E. spread of arms,  $24\frac{1}{2}$  in. electrical equipment; generator with distributor or magneto and starting motor; oil pan, cast iron or aluminum; bell housing, cast iron or aluminum.

## Ream Universal Joint

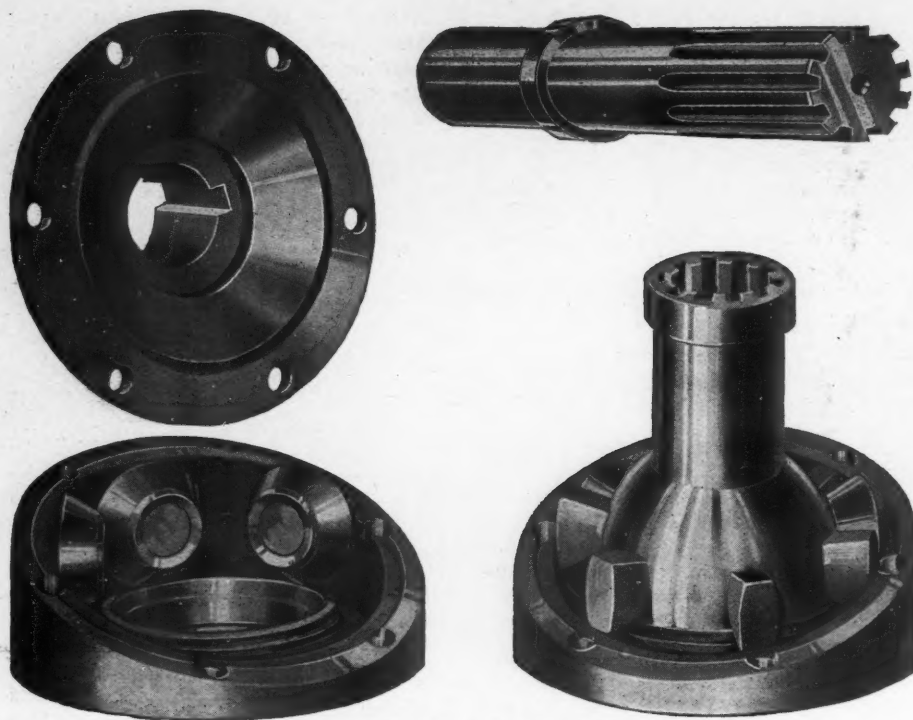
**I**N perfecting the Ream Universal Joint the designer, the R-S Manufacturing Company, Kansas City, Mo., has endeavored to produce a piece of mechanism that will withstand and guard against all of the destructive elements with which a universal joint is surrounded.

In the design of this universal joint, the benefit of the roller bearing, in lessening the wearing effects of the driving member upon the driven, when running under load or pronounced angles of deflection, has been obtained to a maximum degree, and without introducing any intricate or fragile parts. An accomplishment deserving of special emphasis is the combination of the two principles, that of the ball and socket joint with its universal action with that of the roller bearing, with its friction-reducing qualities. In doing this the load with which the square type joint is carried on two bearings on the same or separate pins, is divided into six parts, and instead of carrying this load upon journal bear-

ings, it is placed upon as many rollers, by causing the power to be imparted from a hardened and ground curved surface which is integral with a mobile member to a roller revolvably mounted upon a fixed stud integral with the outer case. In this manner the only friction which can possibly be generated in the transmission of power is limited to the negligible amount required to revolve the roller on its setting.

The lug or projection which is integral with the ball and carries the load, in transmitting same to the roller, merely rolls in and out through an arc limited only by the angle of deflection of the shaft, and in a perfect universal manner of action. No matter what the angle of deflection is, so long as it is within reasonable limits, the load is carried upon the rollers, and the mobile member is held in its central location by the surface of the rollers as they engage the projections, in the same manner of action as a plurality of splines on a spline shaft engages the





Parts of the Ream Universal Joint

Showing the companion flange, the blind shaft, the companion flange end and the propeller shaft ends, together with the rear flexible member in position

splines in the yoke, holding the same within its central alignment.

In addition the inner face of the roller acts as a part of the socket for the ball, which alone would retain the ball within a central location, as each roller is constructed with a concave spherical face, which is held in strict engagement with the surface of the ball between the lugs. Another feature which lends its assistance in retaining the ball between its desired position is the socket surfaces formed on each half of the case, which engage the ball on both front and back side of the joint, thus making a true ball and socket effect. At the same time this ball is not bound by any resistance of motion between the two surfaces in contact, as it is

free to move in any direction upon the rollers, the purpose of the balance of socket construction being to protect the mechanism against end thrust, undue vibration and whip, and other abusive elements.

The entire surfaces of each and all of the parts are machined to accuracy, thus insuring true balance. With the ball held within a socket, and the body of the joint truly balanced and held concentric, no opportunity is presented, by which the driveshaft can come out of balance or to whip. This is prevented by the design of the split yoke, with the spline extending all the way through the ball, making practically integral the shaft and mobile parts of the joint.

## The Ohmer Truck Auditor

**T**HE Ohmer Fare Register Co., Dayton, Ohio, manufacturers of recording fare registers for electric railways and Ohmer Recording Taximeters, announces its latest product, the Ohmer Truck Auditor.

The truck owner has heretofore been at a serious disadvantage. The records of his truck business have been dependent upon the lead pencil reports of his drivers and he has suffered from inaccuracy and tendency to manipulate.

The Ohmer Truck Auditor produces printed reports of the day's work. It gives to the truck owner the same sort of "mechanical supervision" as already enjoyed by the users of Ohmer Fare Registers and Ohmer Taximeters. The device is, in fact, a mechanical cost accountant, which records the expenditures for truck operation in terms of material, time and distance.

It is an instrument weighing 7 lb. and very compact, placed upon the dash of the truck. It provides a complete printed report of all details of the day's work. This printed report is condensed in form, absolutely untamperable and indelible. It becomes at once a permanent office record and serves as a most accurate basis for all statistics of the business. The printed report gives the following information. It tells

Who drove the truck, the date, when the day's work began, how far the truck was driven, the time consumed by each trip, the time of each stop, whether or not the engine was running during the stop, mileage of each trip, number of each trip, weight of each load, time to load, when loaded, when and what tires were replaced, when repairs were made, who made them and how long it took, when and how much

gasoline was taken on, the average mileage per gal. of gasoline, when and how much oil was taken on, time truck was idle, number of trips made, and other information depending upon special requirements.

### Printed Report

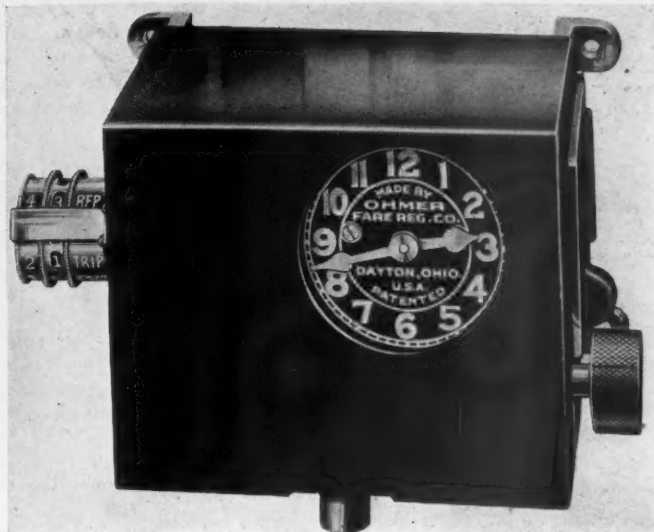
Illustrated herewith is a reproduction of a report taken from an Ohmer Truck Auditor. To read this report, begin at the bottom. Each horizontal line of figures represents a statement taken at the time shown and with the mileage as recorded. Each successive statement indicates elapsed time and accrued mileage. The driver's number appears at the extreme right. The next figure, at right angles, represents the number of the Truck Auditor. Then appears the time, the date, miscellaneous data column and the mileage.

The first horizontal line of figures at the bottom tells us that driver No. 192 started to work at 7 A. M. on January 30, on truck No. 499, with the mileage record at 21288.5. The next line of figures shows that at 7.10 A. M. five gal. of gasoline had been taken on at the starting point, as no change of mileage is indicated. Three pints of oil were put in the engine and the driver started for his loading point at 7.22 A. M. He went one-half mile (note advance in mileage). It took him 28 minutes to go the half-mile. This at once raises the question as to why it took him so long. He started loading at 7.50 A. M. and finished at 8.36, having loaded two tons, and so on up the sheet, checking the activities of the driver throughout the day.

MILEAGE	MISCELLANEOUS DATA					MACHINE NUMBER		DRIVERS NUMBER
	DAY	MONTH	YEAR	TIME	DATA	NUMBER	NUMBER	
21320.1	IDLE	0	JAN	30	P 5 12	499	192	
21315.1	UNLD	3	JAN	30	P 4 41	499	192	
21315.1	UNLD	0	JAN	30	P 3 54	499	192	
21306.0	T.ON	34	JAN	30	P 2 56	499	192	
21306.0	TOFF	23	JAN	30	P 2 10	499	192	
21301.4	LOAD	3	JAN	30	P 1 36	499	192	
21301.4	LOAD	0	JAN	30	P 12 56	499	192	
21301.4	IDLE	0	JAN	30	P 12 56	499	192	
21301.4	IDLE	0	JAN	30	P 12 6	499	192	
21294.2	UNLD	1	JAN	30	A 10 53	499	192	
21294.2	UNLD	0	JAN	30	A 10 23	499	192	
21292.7	UNLD	1	JAN	30	A 9 46	499	192	
21292.7	UNLD	0	JAN	30	A 9 14	499	192	
21289.0	LOAD	2	JAN	30	A 8 36	499	192	
21289.0	LOAD	0	JAN	30	A 7 50	499	192	
21288.5	OIL	3	JAN	30	A 7 22	499	192	
21288.5	GAS	5	JAN	30	A 7 10	499	192	
21288.5		0	JAN	30	A 7 0	499	192	

Reproduction of an Ohmer Register Sheet

A detailed record of the truck's daily maneuvers



**Ohmer Register**  
It is a small, compact, tamper-proof check of truck operation.

Each driver is provided with an identification key. This key bears his number cut in steel type, and must be inserted in the machine before it is possible for him to take his opening statement or even to start the engine. After inserting the key he turns the knurled knob at the right and the opening statement is printed. This operation automatically releases the motive power and the truck can be started. The letters or figures appearing in the data column are under the control of the driver who sets the proper hand

dial at the left of the machine before printing the record. As the data printed in this column can be easily checked either as to time or mileage no temptation toward falsifying is offered.

When the driver stops his truck for loading, for tire changes, engine repairs, etc., and takes his print to record that fact, the engine is automatically cut off and cannot be started again until another print is taken, showing the time consumed in the operation. The tremendous saving in gasoline thus effected will pay the

cost of the device many times over. If the driver fails to stop his engine when loading, that fact is at once evident from the record.

If the driver desires to remove his identification key for any reason, he must first print a closing statement. When the truck is again started, the opening statement as compared with the previous statement reveals the time the key was out. This gives exact information as to the extent of idle time, either during the night or when the driver leaves the truck for lunch, etc.

#### Not an Experiment

The Ohmer Truck Auditor is no experiment. Most of the features are common to either the Ohmer Recording Fare Register or to the Ohmer Recording Taximeter, and have been thoroughly proven by years of successful use.

The entire mechanism of the Ohmer Truck Auditor is the product of experience. There is no chance whatever of any serious mechanical breakdown or difficulty.

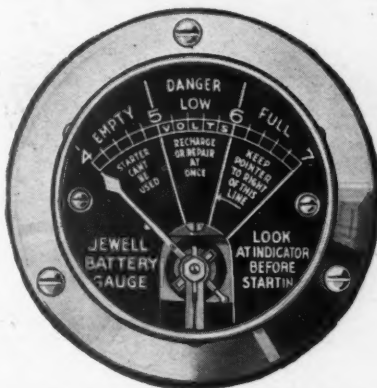
The matter of installing the device is very simple. Men thoroughly experienced in that class of work have satisfactorily worked out the various installation problems presented by all makes of trucks, and prompt and satisfactory service can be given in this connection where it is desired.

#### Jewell Battery Gage

Negligence in battery inspection and ignorance of an inefficiently operating battery, are two evils that are entirely done away with by the utilization of the Jewell Battery Gage, manufactured by the Mehan-McBroom Co., 1301 Michigan Ave., Chicago, Ill.

This device is a constant guardian of the battery, as it registers the exact voltage in figures. The dial of the gage is divided into three zones, and the condition of the battery is indicated by the position of the pointer working from right to left. By studying the accompanying illustration, knowledge as to the information indicated by the pointer can be readily grasped.

Unless the generator replaces the current already drawn from the battery, as a safety-first precaution, the battery should be recharged or examined when the pointer crosses the line marked 6. Every movement of the pointer from that point to the left signals increased danger. If the pointer should pass into the third zone (Battery Empty) it indicates that there is less than five volts and from that down to four volts. This section is of vital value when starting the car. If when the starter is operated the pointer passes all the way down in the Battery Empty Zone, there is a probability of weakness, even if it should go back when the battery is recharging by the starting of the engine. On the other hand, if the pointer goes only to the middle of the danger zone and then returns back to the right and remains there,



The Jewell Battery Gage is a Constant Battery Check

it is a certainty that the battery is strong and charging properly. It is stated that to operate this device only 1-100 of an ampere is required. It is attached to the dash. The retail price is \$7.50.

#### New Shain Ball Spray Carburetor

Deviation from the standard principles of construction, is most evident in the new Shain Ball Spray Carburetor, manufactured by Chas. D. Shain, Brooklyn, New York. Two unique points in the construction of this carburetor, are its self-feeding feature and the elimination of a float. However, it may be used with any feed system, including vacuum, pressure, or gravity. Its self-feeding is intended as an economical advantage in

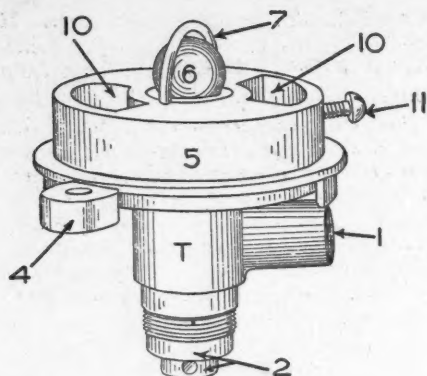
conjunction with vacuum or pressure feeds.

The manufacturer states that it can be placed directly in the manifold of a gas engine, where new manifold construction is contemplated, thus doing away with flanges, fittings and bolts. For use with manifolds of present construction a fitting for the flange is provided, in which is placed the carburetor.

The gasoline or liquid fuel enters the fuel-T at opening indicated by Fig. 1 on the accompanying illustration and passes into the hollow removable screen plug, Fig. 2, which contains in its top an interchangeable nozzle for supplying fuel for a specified inlet diameter of manifold. The fuel passes up through the plug, 2, under the ball valve or sprayer, 6, where its flow is arrested until the suction of the engine and the pressure of the fuel raise the ball off its seat, when the fuel sprays into the mixing chamber, which is formed either by the manifold in new manifold construction or by the fitting with flange for use with present manifold construction. The ball valve is held in place by the guard, 7, and revolves and sprays. The more the throttle is opened the faster it revolves. The ball valve automatically shuts off the flow of fuel when the engine stops.

The screw, 11, holds the fuel-T and the body, 5, of the carburetor. The removal of this screw enables the fuel-T and the ball valve, together with the rotating air throttle, 4, to be removed at any time for inspection or cleaning. The plug, 2, containing the nozzle can be removed independently for cleaning or changes in the size of nozzle if required, without disturbing any of the carburetor or hot-air con-





**This New Model D Shain Carburetor Has a Ball Sprayer**

nections. In the body, 5, of the carburetor as well as in the rotating air throttle, 4, are curved air ports, 10, of sizes sufficient to supply a little more air than can be used for the size of the carburetor. The air ports in the body and in the rotating air throttle coincide when the throttle is fully open and by the rotation of the throttle, the air ports may be partly or fully closed at will.

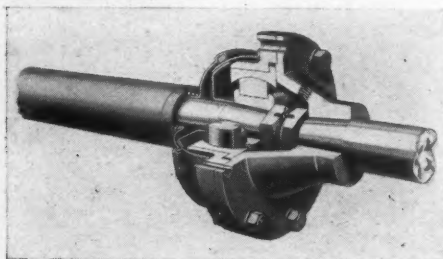
The throttle is located below the fuel outlet and controls only the air. It is connected to the throttle lever on the steering wheel and can be opened as far as desired for speed up to the point of back firing, and when this point is reached the throttle is retarded to the best high speed running position of the engine.

By the use of aluminum in some parts of this Model D carburetor the weight is greatly reduced. For instance, the  $1\frac{1}{4}$  in. carburetor with  $17/16$  outlet, weighs 21 ounces, a little more than  $1\frac{1}{4}$  lbs.

### Pick Universal Joint

The construction of the Pick universal joint is based on the principle of sliding blocks, in which strength is combined with flexibility. It is manufactured by the Carl Pick Co., West Bend, Wis.

The propeller shaft is held between four segments, which form a rectangular bore. These segments rest on four bearings, each a quadrant, and all parts slide and twist within a drop-forged steel body. The body, flanges and case are held together by tight bolts. High-test, heat-treated, carbon steel forgings are used throughout. The four segments form a perfect bearing circle and thus eliminate all binding. The segments slide one way and drive the other. The propeller shaft is free to slide the entire length of the bore, and the same bearing pressures are maintained at all posi-



**Cutaway of the Pick Universal Joint**

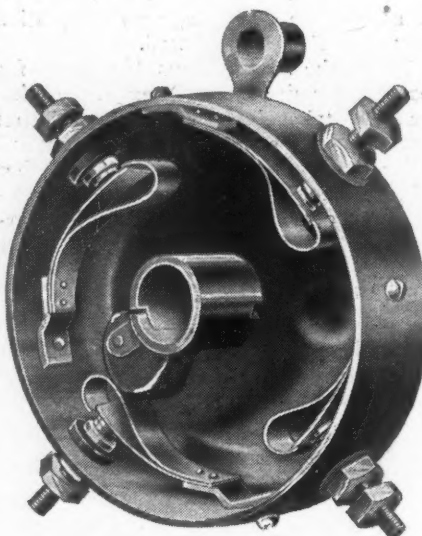
Its construction is based on the principle of sliding blocks. It is lubricated by centrifugal action

tions of the drive. Every part is in direct shear.

The strains are centered, and are applied where resistance is greatest. Constant lubrication is assured, as the centrifugal force and the working action of the joint keep every bearing surface in actual contact with the lubricant at all times. A simple yet effective cut-off retains every particle of grease within the joint. No changes are necessary to install this universal joint in place of another joint. The forward end of the propeller shaft is easily fitted between the four segments of the joint. On trucks originally equipped with the Pick Universal Joint a propeller shaft of tubular construction is furnished.

### Parker Timer

The shell of the Parker Timer, manufactured by the Automotive Specialty Sales Co., 212 Lane St., Dallas, Texas, is made of one piece of cold rolled steel,



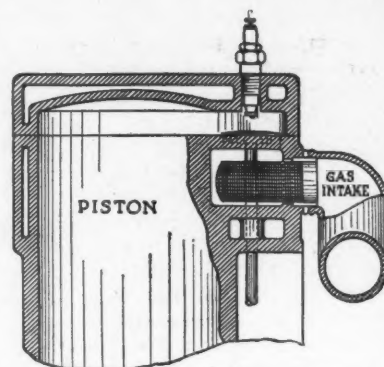
**Interior View of the Parker Timer**

countersunk for fan belt clearance and with shift bracket riveted in place and highly nickel plated. The rotor assembly consisting of but two parts, is carefully timed, and securely joined. Rollers, pivots and bearings have been eliminated. The hub of the rotor is made of cold rolled steel, die stamped and formed. The wiper is made of high-grade vulcanized fibre, being practically wear-proof and non-magnetic all friction is reduced to the lowest possible minimum. The binding post is securely and carefully insulated from the ground with the high-grade insulation materials. The contact spring assembly is particularly well constructed. The springs are made of blue clock spring stock, carefully formed and tempered.

### Daddy Vaporizer

The Daddy vaporizer, manufactured by the Daddy Vaporizer Co., 1317 Maumee Ave., Fort Wayne, Ind., is designed to offset any difficulties in obtaining a perfect explosion.

It is made in one piece of monel metal cloth, and when placed in the intake



**Showing Daddy Vaporizer Attached in Intake Manifold**

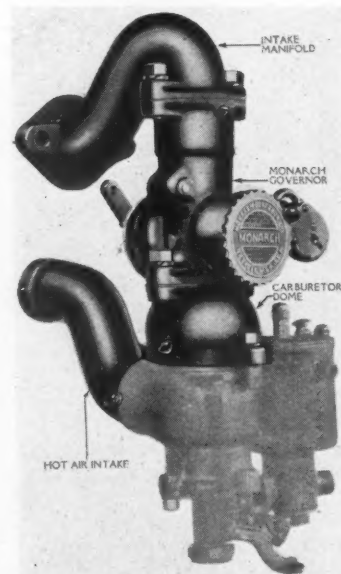
gasoline passage in the cylinder block it is claimed to nebulize the gasoline at the valves when starting, keep spark plugs from oiling, give a more thorough and even mixture, and ignite more readily the admixture.

After taking off the manifold and removing the glands and gaskets, the vaporizer with gaskets on, is clamped on the manifold. The Ford Special sells at \$3.50.

### Monarch Governor for Dodge Commercial Cars

The Monarch Governor Co., Detroit, Mich., has placed on the market a new Monarch unit for quick installation on Dodge Bros. commercial cars. This unit embodies all the well known Monarch features—operates on the vacuum principle, has no shafts or gears, no wheels, no revolving parts, no connection with any moving part of truck or engine; requires no oiling or attention and padlocks at any desired speed.

The manufacturers claim for this governor flexibility to the varying requirements of road and load, full engine capacity being available whenever needed, and the adjustment being instant and automatic.

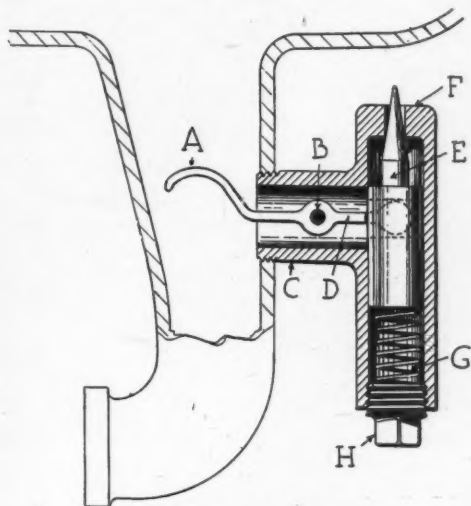


**Special Monarch Governor for Dodge Commercial Cars**

The complete equipment consists of four parts:—special intake manifold, carburetor dome, hot air intake, and Standard Monarch Governor Model D-4. Installation is very simple and can be done by a mechanic in a few minutes. The new intake manifold is substituted for the one on the car and the Governor bolted to it. The special carburetor dome replaces the standard Dodge carburetor top. When the carburetor is connected to the governor, the throttle rod is attached to the lever on the side of the governor. The complete equipment retails at \$30.

### Napco Automatic Fuel Mixer

The National Auto Products Co., 1780 Broadway, New York City, has introduced this Automatic Fuel Mixer, a device for regulating gasoline mixture, by introducing air in proportion to the speed of the vehicle and condition of the mix-



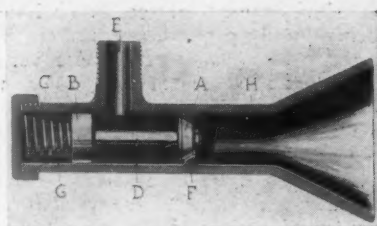
Napco Fuel Mixer

A sectional view, showing the operating parts of the internal type

ture. This device is made in two types, one internally operated and the other externally.

Napco valves are screwed into the intake manifold. The claim is that it saves fuel and increases power, a recent test on a Ford having this device disclosed an average of increase of 2 h.p. and an average fuel saving of 15 per cent. It operates independent of engine suction and therefore compensates for any inability of the carburetor to properly vaporize fuel and maintain a constant ratio of gas to air.

In the internally operated type a baffle plate A is inserted in the intake manifold, this baffle being pivoted at B in the housing C of the valve, and having an arm D, engaging with the needle valve E, which is pressed against its seat F by a spring G, adjustable by means of the screw plug H. The baffle being located in the path of the fuel mixture, is actuated by the impact of the mixture particles, hence if the spring is properly adjusted, the valve E opens and admits air only when a mixture of pre-determined density passes through the manifold at a certain speed, and as the density of the mixture and its speed increases the valve opening increases proportionately,



Napco External Valve

It provides auxiliary air to the engine and operates independent of engine suction

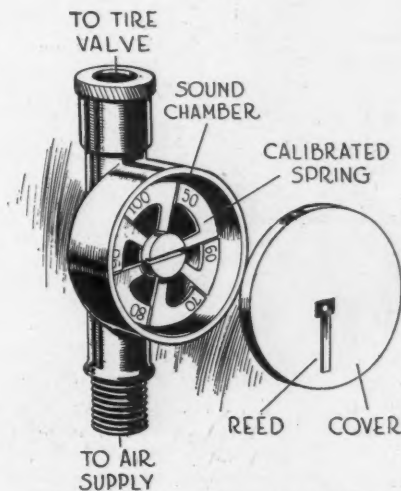
and a greater amount of air is admitted, directed as demanded by the condition of the mixture.

In the externally operated type, the independence from the engine suction is obtained by coupling the air valve A with a piston B, placed in a cylinder C, communicating with the intake manifold. A spring G placed in the piston chamber C presses the valve A against the seat F, and normally closes the air inlet chamber H of the valve, which by means of a suitable connection is exposed to the action of the cooling fan. So long as the speed of the engine is below the limit for which the carburetor is adjusted, the valve A remains closed by the pressure of the spring G, and the carburetor alone furnishes the air for the fuel mixture. But as the speed is increased beyond this limit, the increased air pressure due to the greater speed of the cooling fan, overpowers the pressure of the spring G, thereby moving the valve A away from its seat F and allowing air to be driven from the chamber H, through the valve opening into the nipple E, and thence into the manifold. The higher the engine speed the greater will be the pressure produced in chamber H, and thus the movements of the valve A and the amount of secondary air admitted are proportional to the speed of the engine.

### Napco Tire Pressure Indicator

Another device added to the line of products manufactured by the National Auto Products Co., 1780 Broadway, New York City, is the Napco tire pressure indicator. It is an advanced form of tire pressure gage, which when attached to the tire valve during inflation, emits a musical sound when the proper pressure has been reached and simultaneously prevents further inflation.

It consists of a casing connecting the pump connection with the tire valve, and has a sounding chamber communicating with the main air passage by a small opening closed by a valve. This valve is held open upon its seat by a graduated spring, mounted in the sounding chamber, the cover of which has an opening covered by a harmonic vibrating reed.

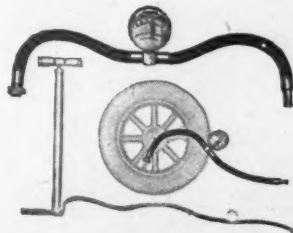


Napco Tire Pressure Indicator

The feature of this tire pressure indicator is that it emits a sound when the proper pressure has been reached. The valve is set before the tire is inflated.

### Apex Tire Gauge and Extension Hose

The Apex tire gauge and extension hose outfit, manufactured by the Apex Electric Mfg. Co., Chicago, Ill., is designed to indicate the correct pressure of a pneumatic tire instantly and at any moment during the inflating operation. It is easily attached to any type of hose that service stations may use, lengthening the hose about 14 in., thus making it more easily handled.



Various Views of the Apex Garage and Extension Hose

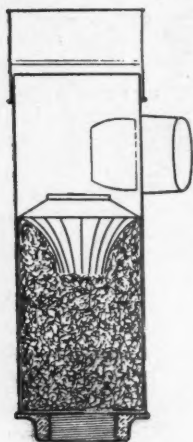
It may be attached to all foot and power pumps, without danger of under-inflation or over-inflation.

In using this device it is first set to the required pressure by removing the cover of the sounding chamber and shifting the graduated spring around its center until the section adjusted for the pressure desired, covers the valve and holds it to its seat. After replacing the cover, the indicator is then screwed on the valve of the tire and the air supply hose is attached to the free end of the indicator. The pump is then started and kept going until the reed in the cover of the indicator sounds the warning that the proper pressure in the tire has been reached, whereupon the pump is discontinued and the indicator unscrewed from the tire valve. The spring having been set for a certain pressure, the valve connecting the main passage with the sounding chamber is held upon its seat by the spring as long as the pressure in the tire is less than the pre-determined amount. But as soon as the desired pressure is exceeded, the pressure in the main passage overcomes the pressure of the spring, the valve is lifted from its seat, and the air passes into the sounding chamber and sets the reed into vibration, thereby giving the warning sound. This device is accurately made, and easily attached and detached.



### Pomona Air Cleaner

In the Pomona air cleaner, manufactured by the Vortex Mfg. Co., 165 W. Commercial St., Pomona, Cal., separation of the dust from the air is effected in three stages in three parts of the cleaner. There is a centrifugal separation in the lower part of the cylinder and a second centrifugal separation in the space between the filter and the baffle. The final and complete cleaning is then effected in the oily fiber of the filter. In each case the dust is caught and held in oil, which the maker considers the only sure way of holding it.



Sectional View of the Pomona Air Cleaner for Trucks and Tractors.

The object of the two centrifugal cleanings is to relieve the filter from the heavy duty of taking care of all the dust. Thus are combined comparative thoroughness with large capacity and obviate the necessity of constant care.

The construction of this air cleaner is such that it may be supported entirely by the outlet connection and the intake may take any direction. The inlet may be connected to accessory preheating the air before passing through the carburetor.

The oil used in the cup and for saturation of the filter may be such as is drained from the crank case.

Special fittings and brackets are furnished if desired. This cleaner, which is made in three sizes, models Nos. 500, 600 and 700, with outlets 1½ in., 2 and 2½ in. respectively, lists at \$10, \$14 and \$18, f.o.b. Pomona, Cal.

### Fuller Models LTU 4 and 5 Transmissions

The models LTU 4 and 5 transmissions produced by the Fuller & Sons Mfg. Co., Kalamazoo, Mich., are designed with a provision for mounting a tire pump. They are made with multiple-disk clutches, which automatically take up wear; hardened saw steel disk against best woven asbestos fabric; drop-forged, one-beam, one-piece levers, a flange to fit any standard engine; hardened nickel-steel studs, into which, it is claimed, the disk will not cut; oiler tube to clutch-throwout-bearing opening above the floor boards; large brake release button; self-adjusting stuffing boxes, and a pedal shaft to suit any requirements.

The shafts are 3½ per cent nickel steel, hardened and ground. Annular ball bearings are used. The plate covering the tire connection can be easily removed, and power take-off fitted on.

The model LTU 4 has a capacity of four-cylinder engine up to 227 cu. in. and the model LTU 5 up to 294 cu. in. piston displacement. These models are also supplied with a No. 2, 3 or 4 S. A. E. bell housing. Following is the gear



Fuller LTU Transmission

This gearset is made in two sizes having three speeds forward and one reverse. Provision is made for the mounting of a power pump on the left side and a power take-off on the right side

ratio of models LTU 4 and 5; 3rd, 1 to 1; 2nd, 1.7 to 1; 1st, 4 to 1; reverse, 3.5 to 1.

### Bingham Spark Plug

A spark intensifier and the fact that it can be observed, because of its special construction, to determine whether or not it is functioning properly, are the features of this plug. The manufacturer states that the material and workmanship insure the prevention of fouling or breakage, and that its durability makes it adaptable for tractor use. It is manufactured by Bingham Perfected Spark Plugs, 324 Mulberry St., Rockford, Ill.



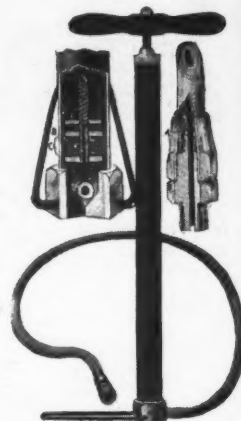
Bingham Spark Plug  
Embraces a visible spark cap

### Casey-Hudson Tire Pump

The laminated leather piston and cup valve are the features of the new tire pump, the Casey-Hudson Co., 357 East Ohio St., Chicago, Ill., is offering to the trade.

The piston is made up of five layers of leather specially treated, to prevent drying out. Any air that might possibly get by the laminated valve is stopped by a cap valve at the top, which consists of a leather washer retained in place by a brass ring.

The tube of this pump is a full inch and a quarter, of cold drawn seamless



Complete and Close-up Views of the Casey-Hudson Pump and Its Two Features, the Laminated Leather Piston and Cup Valve

tubing, Parkerized against rust, both on the in and outsides. The tube is set in a hexagon base milled from a solid brass bar. The handle is of mahogany, finished hardwood, and the hose is 36 in. long. The base fittings are designed so that the hose connection is kept tight at all times. The folding stirrup is a portability feature. It sells at \$5.

### H. L. B. Fan Belting Display

To increase fan belting sales the Hide Leather & Belting Co., Indianapolis, Ind., manufacturers of all manner of belting are offering a display rack that shows off its products to advantage.

This rack is furnished in two sizes, Junior and Senior, the latter being 2 ft. wide, 1 ft. deep and 3 ft. high, and the former, with the exception of its height, which is 2 ft., is similar in size. They are finished in dark oak and surmounting the top of each rack is a lithographed sign in colors which greatly enhances the effect of the display. When the spools are placed in the rack they are permanent, removing a spool only when replacing an empty one.

The Senior rack contains a gross, 750 ft. of belting. Price of assortment (rack free) \$200. Four brands in various sizes are furnished as follows: Wetprufe-Flat Fan Belting: 50-ft. roll, ¾ in.; 50-ft. roll, 7/8 in.; 50-ft. roll, 1 in.; 50-ft. roll, 1¼ in. Vee Solid V Fan Belting: 50-ft. spool, 5/8 in.; 50-ft. spool, 1/2 in. Vee Laminated Vee Fan Belting: 100-ft. spool, 5/8 in.; 50-ft. spool, ¾ in.; leather-bound-round, 5-16 in.; 50-ft. spool, 3/8 in. The Junior rack contains, gross, 275 ft. of belting.

Price of assortment (rack free), \$100. The same four brands in fewer sizes are

furnished, as follows: Wetprufe Flat Fan Belting: 50-ft. roll, 1 in.; 50-ft. roll,  $\frac{3}{4}$  in. Vee Sol—Solid V Fan Belting:



H.L.B. Belting Display Rack

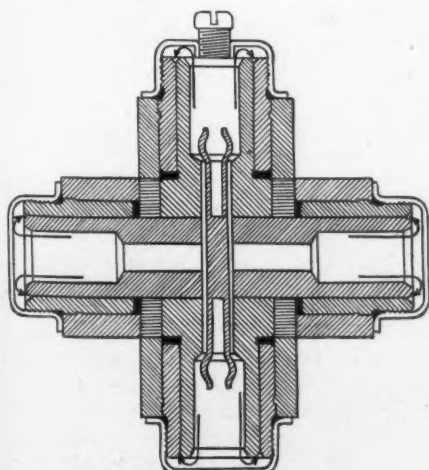
50-ft. spool,  $\frac{3}{8}$  in. Vee Flex—Laminated V Fan Belting: 50-ft. spool,  $\frac{3}{8}$  in.; 25-ft. spool,  $\frac{3}{4}$  in. Leatherbound—(round) Fan Belting: 25-ft. spool,  $\frac{3}{8}$  in.; 25-ft. spool, 5-16 in.

### Blood Bros. Improved Universal Joint

A convenient method of lubrication is the most recent development in the B-B Universal Joint, produced by the Blood Bros. Machine Co., Allegan, Mich.

This new joint known as model B, has really supplanted Model A with its new improvements in construction. The most important departure in construction from the old model is in the cross pins, which are now made hollow, to permit the oil to lubricate the entire joint through an opening in one of the four bushing caps. The oil passes through the hollow pins and is fed to all four bearings by centrifugal action. This improvement is shown in the illustration herewith.

A turning in the yoke and locking the bushing cap to the yoke is also plainly illustrated. These two improvements are stated to render a much more efficient working action of this joint.

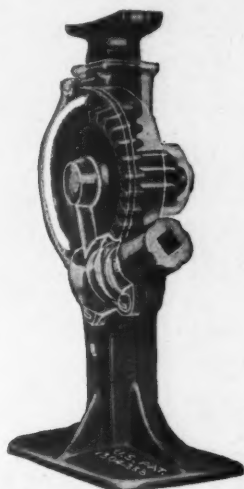


Section of the New Blood Bros. Universal Joint

Its prominent feature is its new lubricating system, which incorporates centrifugal force

### Worm-Gear Operated Jack

The Norlund jack, manufactured by the Norlund Novelty Co., 1300 East Jefferson St., Williamsport, Pa., is constructed on the worm-gear principle. The worm connects with a pinion gear, which meshes with a pinion that operates on a lifting bar. This construction eliminates undue friction. There is no lateral motion thrust as the worm is engaged in lifting at all times.



Norlund Worm Drive Jack, Showing Worm Drive Principles in Phantom

It is constructed entirely of malleable iron, and is composed of three parts, namely, the jack, bar and crank. The bar is furnished in two parts, and is connected with a socket for extension. It is placed on the market with an unrestricted replacement guarantee of 5 years.

### Alwite Metal

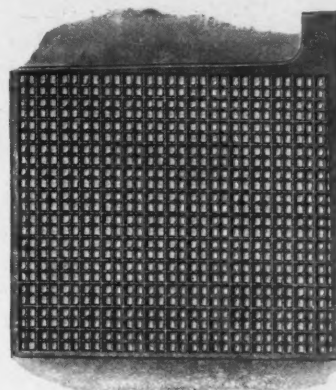
The Superior Engineering Works, York, Pa., manufacturer of Alwite Metal, specifies the following points as to its features: It is non-corrosive and does not rust. It is of solid white color throughout, takes a finish by buffing only, is high in tensile strength, and is stated to be equal to nickel plating. This metal is particularly valuable in articles, which have been nickel plated, and require casting of solid white color and a high nickel finish, such as hub caps, tank caps, automobile hardware, etc.

### An Improved Grid for Storage Batteries

An announcement by the Multiple Storage Battery Co., 104 West 52nd St., New York City, discloses that it has perfected a new grid for its storage batteries, which is different from the usual lattice or staggered grid design.

It is a mesh grid, which, by means of its design, makes it possible to obtain greater inbuilt strength and conductivity. Another feature claimed is that it eliminates bucking or warping on rapid discharges, and also the shedding of active material or oxides. By a private process, claimed to have been discovered by this company, an active material is made to adhere to the grid indefinitely.

The combination of electro-chemistry and mechanics creates a hard porous plate, which affords higher capacity and longer life. The distinctive quality of the material in the multiple plate enables it to maintain its electrical contact with the



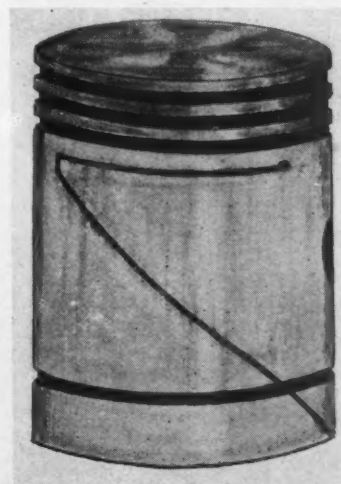
New Storage Battery Plate Grid

This grid is claimed to result in greater conductivity and reduce danger of warping and buckling

grid. The manufacturer states that this new grid has twenty per cent. more metallic lead exposed to the action of the electrolyte than is generally exposed, resulting in an increase of the total of active plate area per sq. in.

### Kant-Skore Aluminum Alloy Piston

The Sinclair Mfg. Corp., Buffalo, N. Y., manufacturer of the Kant-Skore Aluminum Alloy Piston, in bringing out the merits of its product, places particular emphasis on the following points: Has all the advantages of aluminum, with none of the drawbacks. Expansion is taken up by the piston itself, a condition made possible by the provision of spiral grooves. It cannot expand toward the cylinder wall, therefore, does not seize or score the cylinder. The clearance is fixed  $\frac{1}{2}$  thousandths (.0005) of an inch, whether the engine is hot or cold, thereby permitting maximum compression. It is stated to practically eliminate vibration, and to give an added reserve of speed and power.



Kant-Skore Aluminum Alloy Piston  
Note the spiral groove. The groove takes up any piston expansion



# Fleet of Pneumatic-Equipped Speed Trucks Distribute Goodyear Rubber Products to Service Stations

**B**Y the establishment of 21 truckportation lines from its Boston and Philadelphia branches, the Goodyear Tire & Rubber Co. has been able to make delivery of rubber products to its service stations in one-third the time required by other methods of transportation. One feature of this truckportation—new terminology for hauling by motor truck—that appeals strongly to service stations is that the new system allows speedy and regular tail-board deliveries and eliminates the necessity of hauling from freight stations.

Increase in sales has been noticeable since these lines have been in operation, service stations frequently placing orders because of the assurance that delivery will be made at a certain time, depending, of course, on the location of the city and the schedule of the truck on that route.

Probably for the first time, deliveries have been attempted on time-table schedules. Each truckportation route has a schedule that shows exactly when a truck should arrive in every city. Service station owners know the time of arrival and are able to govern their buying accordingly. While it is not claimed that the hourly schedules are infallibly maintained, yet regularity of operation has been remarkable.

Aside from the improvement in deliveries over other methods, the success of the Boston and Philadelphia truckportation routes has more than local significance. Covering routes from 50 to 250 miles in length by from one to four-day trips in one-third the time of railroad deliveries, the success of these routes indicates what can be done in the United States to relieve the nation-wide traffic congestion existing on all railroad systems and which is causing serious delay. Goodyear is so enthusiastic about these routes in from 9 months' to a year's operation, that the company is seriously considering the establishment of similar lines in cities where there are branches and the territory is not too spread out or road conditions unfavorable.

Probably the most progressive step contemplated by the Philadelphia branch to cover completely with deliveries the huge territory lying between Pittsburgh

Scranton and Wilmington, is the proposed plan to have the six truckportation lines operating from that branch act as feeders to the trolley express lines in counties where poor roads will not permit truck deliveries. By hauling rubber products to trolley express terminals at Lancaster, Harrisburg and other centers, one-day express deliveries can be made to nearly every county in Pennsylvania. Negotiations for co-operation have been practically completed with traction officials and indications are that the combination service will be installed in the near future.



## Truck No. 1

### MONDAY

Boston Branch	7.25. A. M.
Wilmington, Mass.	8.05
Tewksbury, "	8.25
Lowell, "	9.05
Tyngsboro, "	9.35
Nashua, N. H.	10.25
Merrimack, N. H.	10.45
Manchester, "	11.20
Suncook, "	1.10 P. M.
Pembroke, "	1.25
Concord, "	1.45
Penacook, "	2.05
Boscawen, "	2.15
Franklin, "	2.35
Tilton, "	2.45
Laconia, "	3.15
Lakeport, "	3.25
Weirs, "	3.40

### TUESDAY

Wilson, N. H.	10.30 A. M.
Derry, "	10.50
Canobie Lake, "	11.10
Salem Depot, "	11.25
Methuen, Mass.	11.50
Lawrence, "	12.05 P. M.
Boston, "	3.10

More than 70 per cent of all distribution from the Philadelphia branch is being made by motor trucks—approximately 500,000 lbs of finished products having been transported each month by the six big pneumatically-equipped trucks. In Boston about 68 per cent of sales are at present being distributed by 15 truckportation lines. Eventually it is expected to deliver by truck 95 per cent of all merchandise sold by both branches.

Some idea of the value of the six truck routes in the Philadelphia territory can be gleaned from the fact that 1031 service stations are served with regular deliveries. In Boston about 350 service stations are reached.

The longest route from the Philadelphia branch covers 425 mi. in four working days. It reaches as far as Sunbury, Pa., with stops at Allentown, Mauch Chunk, Pottsville, Shamokin, Millersburg and Harrisburg. There is also a trip of 340 mi., made in three days, that serves Lancaster, York, Gettysburg, Waynesboro, Chambersburg, Carlisle, Harrisburg and Reading. An excellent test is given the heavily loaded trucks on this trip over steep mountain grades.

From the Boston branch the two-day "Cape Cod" route of 250 mi. to Orleans, with stops at Plymouth, Sagamore, Brewster, Chatham, Wood's Hole, Buzzard's Bay and Wareham, is the longest made by the trucks. The shortest run is that of 20 mi. to Brockton. Other routes run to Worcester, Lowell, Weirs, N. H.; Portsmouth, N. H.; Marlboro, Fitchburg, Athol, Rutland, Millbury, Haverhill and Gloucester, with many intermediate stops.

The higher average running time made by the various sized pneumatically-equipped trucks on all the Goodyear lines has been a source of surprise to most of the service stations, whose owners are enthusiastic over the new delivery service. Passenger car owners have become used to the sight of these trucks rolling over the highways at practically touring car speed. Many service station owners express a hope that they will never again have to rely on railroad deliveries.

One saving effected by the use of motor trucks for delivery has been the elimination of wrapping or crating of goods for shipment—no inconsiderable item.

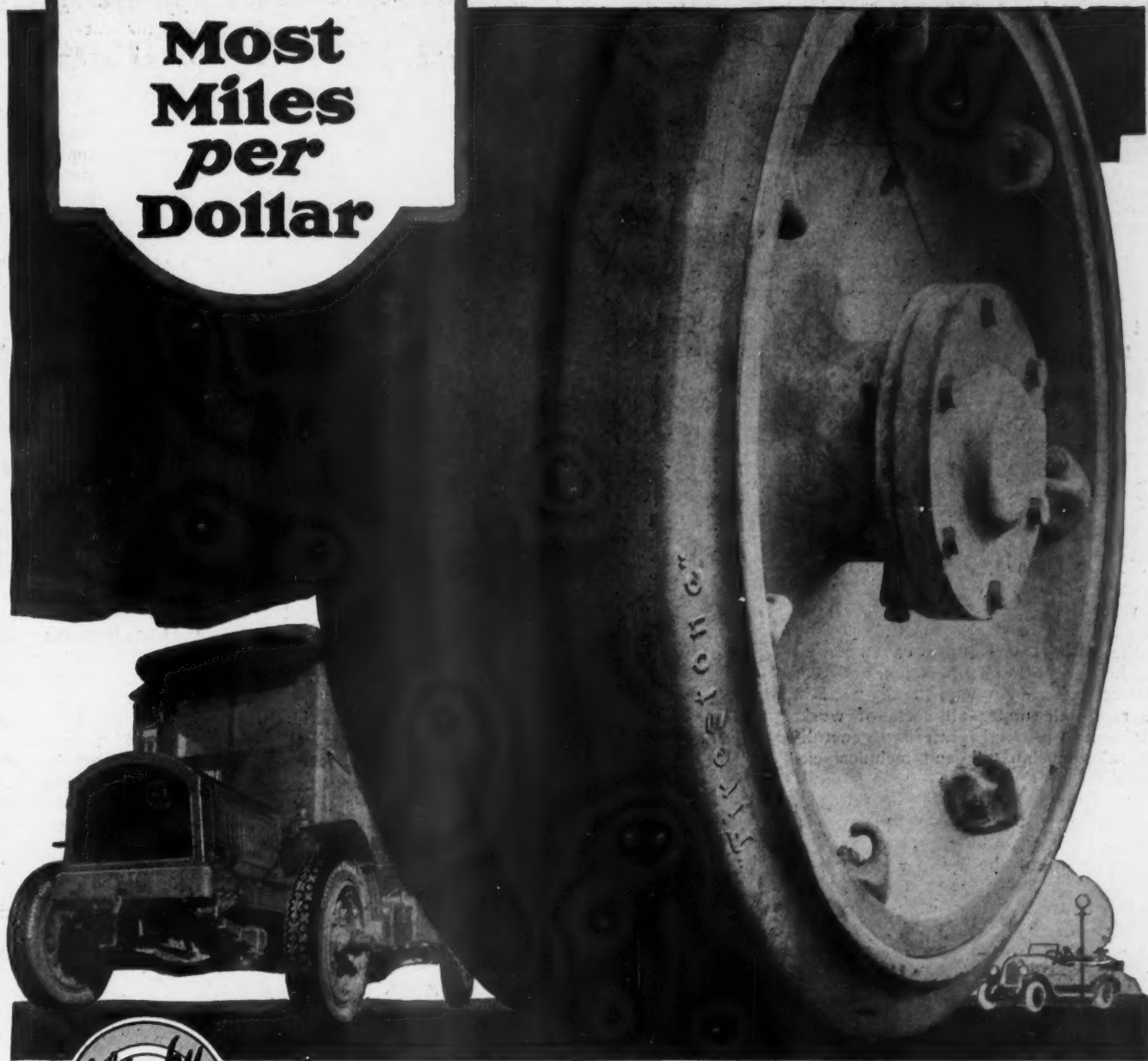


Boston Branch Truck Unloading Tires



Boston Branch Truck on the Highway

**Most  
Miles  
per  
Dollar**



**T**HE extra bulk of resilient rubber in this Firestone Giant Tire—aided by the grooves in the tread—gives traction that will take your truck over the worst going.

The rubber wears long and evenly, and the support of *all* the wheel load comes on *all* the tire *all* the time.

Your own experience will add to the truck saving and fuel saving records of the Firestone Giant Solid Truck Tire.

**FIRESTONE TIRE & RUBBER CO.,** Firestone Park, Akron, Ohio  
Branches and Dealers Everywhere

# Firestone



Originating to some extent from the nation-wide traffic congestion caused by the breakdown of the country's railroad freight transportation systems, yet partly established to show the practicability and importance of motor trucks in speeding

up modern business, these truckportation routes promise to become permanent through insistent demand rather than remain during the emergency only.

Traffic experts have asserted that a solution is needed for the grave problem

of railroad freight congestion now confronting the country. They predict that widespread use of motor trucks for short hauls and as feeders to railroad and trolley express lines offers a logical cure for our transportation ills.

## Is Your Rear Axle Weak? Can You Prove It Isn't?

Portland Truck Dealer Has a Table of Repair Jobs With Which He Can Tell a Prospect Just Where the Truck Stands on Every Unit

**I**F you are a truck dealer, and have a prospect pretty well sold on your truck, and are just reaching for the contract blank and unscrewing the cap to your fountain pen, what would you say to the prospect if he should calmly observe that he liked the truck mostly, but it was said that owners always had trouble with its rear axle and he guessed he wouldn't buy it, on that account?

Would you have to rely on your golden tongue to talk him out of the idea or would you have some facts and figures, taken from actual run of shop work on the truck in question, to convince him that he was on the wrong tack, and that your truck held up wonderfully well in the rear axle under all sorts of work. Catalogue stuff and glittering generalities, salesmanship talk and technical explanations of the way the axle is built wouldn't go very far with the prospect at that stage of the argument; you would have to have something concrete in the way of proof of the axle's efficiency to swing him over the peak, and get him steadied down to the signing point again.

It was just this sort of a question that prompted the Roberts Motor Car Co., Inc., of Portland, Oregon, to dig into the subject and prepare a set of figures that answers questions as to the various parts of the truck this company handles better than anything the catalogue or sales manual can do. The first time the question was put to them they had to use the salesman's usual line of talk to meet it. But the next time; well, they were ready for anything the prospect asked. Here's how they did it.

They began to keep a very strict account of the nature of all repairs to their type of truck, passing through their shops, and after 317 separate jobs had been done on trucks going through, they compiled a table showing the number of each type of repairs made. This they reduced to percentages, which showed at a glance the percentage of each kind of repair made during the period. This table follows:

The two parts of the truck showing the most repairs are engine and brakes, and it is very probable that repair figures kept on the majority of trucks would show up a similar condition of affairs. This is easily understood, for the engine outranks any other part of the truck in the number of its moving and wearing parts constantly under stress, and the

REPAIR PERCENTAGE	
Engine repairs of all kinds	53.70 %
Clutch repairs.....	5.66
Transmission repairs.....	1.26
Propeller shaft and universal joint repairs of	
all kinds.....	8.20
Rear axle, except brake....	6.00
Brakes.....	11.34
Spring repairs of all kinds	1.26
Shifting spring, rear axle, all causes.....	2.50
Shifting spring, front axle, all causes.....	2.52
Frame repairs, all kinds...	1.56
Steering gear repairs, all kinds.....	6.00
Total.....	100.00

Table of Repair Jobs Compiled From Three Hundred and Seventeen Different Operations

brakes, of course, are subjected to wearing strain constantly, that means renewal.

That the rear axle of the truck this company sells is not a weak part of the truck, constantly giving trouble, is clearly shown by the small percentage of repairs made to it, according to the table. That only 6 per cent. of the total repair jobs in the shop had to do with rear axle trouble is pretty convincing proof that the rear axle of this particular truck is O. K., and the prospect can be shown these figures if he has any doubts.

The proportion of repairs to other parts of the truck, as shown in the table, should be of considerable interest both to truck dealers and to their service managers, and a similar analysis of the repairs on the type of truck handled by each would prove valuable sales literature for use of the truck salesman.

The dealer or salesman who has this sort of analysis of the truck he is selling is prepared to meet almost any statement he may run up against as to the wearing qualities of his particular line, and if the figures are honestly prepared, the prospect will find it hard to meet the argument.

It should be stated in connection with this table that the repair jobs included both wrecks and fire losses, so that the figures are comprehensive in the extreme and as fair to the prospective buyer in what they include as they are to the dealer.

The Roberts Company has many good ideas used constantly in selling trucks, which probably accounts for the success of the company in the Portland territory.

When it comes to taking in used trucks the company does not kid itself into thinking an old truck is worth nearly as much as the new, and it tells the prospective buyer of the new truck just what will be allowed, and why. But it also tells him that if the Roberts Company can get more for the old truck than is expected, he will be allowed just that much more for the trade-in. The result is that, scattered over the Portland district, are many customers of the Roberts Company who traded in old trucks as part payment on their new jobs, who have been surprised several weeks after the transaction to receive substantial checks, their part of the higher price received for their old trucks when the company finally sold them. All of us like to get money like that, and this one proof of the fair dealing of the Roberts Company has made many business friends for the company.

Another plan the Roberts Company uses in keeping in touch with the truck selling field in the Portland territory is to list the entry of each new make of motor truck into the territory, when the first dealer is appointed. From that time on each time the dealership changes hands the name of the new dealer is put down. Also, the number of trucks being sold by each dealer is entered, with the result that all this information is constantly at the command of the sales force for use where needed.

**Motor Alcohol**, so-called, discovered by J. P. Foster, chemist of a sugar plantation, Hawaii, is now used in passenger car, marine, stationary, truck, and tractor engines. This fuel is obtained from the waste molasses, and there is molasses enough available in Hawaii to produce 9,000,000 gallons of "motor alcohol" which is sufficient to supply all the automobiles in Hawaii. Incidentally this will release shipping space formerly used for transporting gasoline from the United States.



## Better Transportation -The Nation's Vital Need

With rail facilities taxed to the breaking point, our biggest problem today is to relieve this strain and help transportation keep pace with industry and agriculture. Unquestionably the solution is the motor truck. Its worth has already been established, and the necessity for its use on a larger scale is becoming more and more apparent every day.

Ross Steering Gears have played an important part in making the motor truck a more efficient and reliable means of transportation. The easy steering, safety and reliability, which are guaranteed by the exclusive screw and nut design, have made Ross Steering Gears standard equipment on 418 different motor truck models from 165 different manufacturers.

*Write for any further information desired*

**ROSS GEAR & TOOL COMPANY**  
760 Heath Street, Lafayette, Ind., U. S. A.



# ROSS STEERING GEARS

THE STEERING GEARS THAT PREDOMINATE ON MOTOR TRUCKS



## The Dealer and the Banker

(Continued from page 34)

There is plenty of money in this country. The Comptroller of the Currency says that the unused credit affordable through the Federal Reserve System is \$750,000,000 and that if necessary by a reduction of only 10% in the reserve ratio that an additional two and a half billions are available. Many bankers have been unreasonable and have misquoted and misinterpreted the Federal Reserve System's rulings with reference to automobile credits, and I believe that it is being realized more and more every day that the automobile is an essential—a producer—a maker of time—an indispensable unit of transportation—a carrier of health and contentment to the home—a winner of wars—in peace a builder of our communities.

As to the lack of scientific handling of the good road problems, I believe that our engineers of the State Highway Departments will finally effectively co-operate with the Federal Government in building roads whose sub-surface construction will be strong enough to withstand the demands of an ever-increasing heavy traffic.

As to the decline of gasoline reserves, I believe that the spirit of enterprise in this

land of ours will take care of new production and that our inventors will devise ways and means to develop greater power from our internal combustion engines without the waste now attending each propelling explosion.

As to the saturation point, this depends, as I view it, upon the foresight of the management of our factories. Certainly, two millions more motor vehicles can be easily sold in addition to those already running in the United States, making in all in round figures 10,000,000. The life of an automobile at five years is liberal, so that the replacement possibilities of two millions each year are as great as the volume of production of 1920, this without reference to the immense field open to the pneumatic tire truck and the enormous possibility of the tractor. Farm motorization is as inevitable as the law of gravitation. Horses and mules will be anachronisms in the history of tomorrow, for those beasts of burden unnecessarily consume the food of humans and truly are economic paradoxes.

You are, gentlemen, utilizing your time and your brains and your energies in the most useful pursuit of our age, and be sure to keep foremost in your mind that the banker and the motor vehicle financier are and want to be your best friends.

In this case the Arcadia trailer has a chassis 14 feet long, it being the regular type of four-ton trailer, except that it has two extra feet of frame length. It is equipped with 40 x 8 pneumatic tires. The trailer has a brake which is controlled through a connected cable by the driver of the truck without leaving his cab.

The body is 14 ft. long and 10 ft. wide. The seats run lengthwise, there being one on each of the outer sides and one double seat running through the center. The portability of the seats permits the ready conversion of the trailer from a passenger into a freight unit to accommodate immediate freight movements of the company. The trailer can be put into commercial freight hauling from the plant to necessary points during the hours that it is not used for the carrying of passengers.

The passengers enter the trailer by climbing liberal sized stairway which is put to either end of the trailer. This stairway is then pulled in and stored away during the trip. The upper half of the body is cut away but curtains are provided for stormy weather. The upper halves of the doors, which are alike on both ends, are fitted with wired glass, which provides sufficient light within the trailer when the curtains are down. But if more effective lighting is desired the truck wiring can be carried to the trailer and the latter lighted with the usual electric light, or the lights can be run from storage batteries.

The Arcadia trailer construction uses a rather flat spring, which, coupled with a pneumatic tire, gives easy riding, in fact much easier than in the average truck, as the trailer is relieved from engine vibration.

## The Trailer as a Passenger Transporter

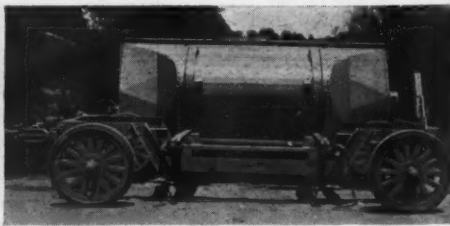
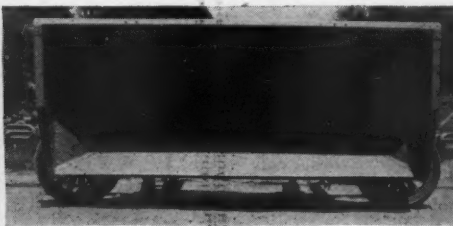
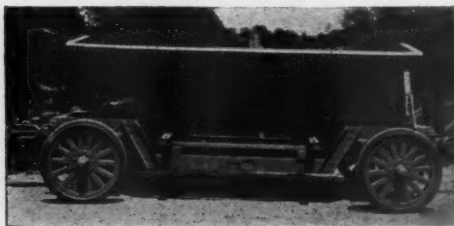
THE old things pass to be superseded by new things. This is more particularly brought forward in truck and trailer transportation than in any thing else in the line of transportation. The Beech-Nut Packing Co., of Canajoharie, N. Y., have found it necessary to go to adjoining communities in order to get sufficient help to operate its factory. For a time they were able to get along with a truck alone, but now the time has come when a greater capacity is needed and to overcome this, the company is using an Arcadia trailer. The help is brought in from towns, four, six and eight miles distant from Canajoharie every morning and are returned to their home towns at night.

The truck will accommodate from thirty to thirty-five people while the trailer will hold forty to forty-five. There is nothing

particularly new about truck construction or use for this purpose but the trailer is in a little different class and comes under the head of the newer types of equipment.



Transporting Help From the Neighboring Towns to the Beech-Nut Packing Company's Factory. The Trailer Was Dubbed the Arcadia Pullman by the People



Three Views of the New One and a Half Ton, Drop Frame, Four Wheel, Reversible, Highway Trailer, Equipped With a Two-Way Steel Dump Body, Recently Introduced by the Highway Trailer Co., Edgerton, Wisconsin

The feature of this job is the drop frame, which is constructed of double channel to withstand the strain and weight that is thrown on one side of the trailer during the dumping operation. With this equipment is furnished a tongue, double tree, single trees, neck yoke, driver's seat, etc., making it possible to use the trailer as a wagon unit when collecting city refuse or similar lines of activity. The tongue has the same automatic connection as is placed on the standard connecting link, and the team can be disconnected from the trailer as quickly as disconnecting the connecting link. The bodies can be obtained in capacities ranging from two to four and one-half yards.

SIVYER  CASTINGS

Among the makers who assure greater dependability and longer life of their products through the partial or exclusive use of Sivyer Electric Steel Castings are:



*Sivyer Steel rear axle pad and radius rod block used on Service Motor Trucks*

#### Tractors

J. I. Case T. M. Company  
Dart Truck & Tractor Corporation  
Electric Wheel Company  
General Ordnance Company  
Holt Manufacturing Company  
Huber Manufacturing Company  
Illinois Tractor Company  
International Harvester Company  
Keck Gonnerman Company  
John Lauson Manufacturing Company  
Minneapolis Threshing Machine Co.  
Peoria Tractor Corporation  
Port Huron Eng. & Threshing Co.  
Samson Tractor Company  
Turner Manufacturing Company  
H. A. Wetmore

#### Trucks and Automobiles

Dart Truck & Tractor Corporation  
Diamond "T" Motor Car Company  
Federal Motor Truck Company  
Forschler Motor Truck Mfg. Co.  
Menominee Motor Truck Company  
Nash Motors Company  
National Motor Car and Vehicle Corp.  
Parker Motor Truck Company  
Reo Motor Car Company  
Service Motor Truck Company  
Sterling Motor Truck Company  
Velie Motors Corporation

#### Engine, Parts and Implement Manufacturers

B. F. Avery & Sons  
Deere & Company  
Falls Motor Company  
Foote Bros. Gear & Machinery Co.  
Grand Detour Plow Company  
Jaxon Steel Products Co.  
Midwest Engine Company  
R. D. Nuttall Company  
Wisconsin Motor Manufacturing Co.

## Sivyer Steel Resists Wear

**F**OR parts having to oppose the continuous jolts and heavy shocks received in everyday duty, an increasing number of manufacturers in different sections of the country are coming to the use of a superior metal—Sivyer Electric Steel. The Service Motor Truck Co. uses Sivyer Castings for the rear axle pad and radius rod block because of their uniformly flawless quality and because of the superior resistance to crystallization and wear found in Sivyer Electric Steel. Attached to the rear axle, this part stands unflinchingly the repeated jarring and severe driving strains to which it is subjected. Thus are Sivyer Castings bettering the performance and lengthening the life of America's leading trucks.

# SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE



## Taken From Current House Organs

### Proper Transportation

Motor trucks are not being exploited as competitors of the railroads, but, on the contrary, the use of motor trucks has done more in the past few years to simplify transportation problems than all other things combined.

The motor truck assumes the short hauls, placing commodities in easy reach of the railroads. Instead of it being necessary for the railroads to place their cars at out-of-way points to receive shipments, they are able to place them where they can be most easily handled without excessive delay.

With the existing shortage of railway equipment, this is a very important matter. The future of this country's business depends largely on transportation facilities. Our chief difficulty at the present time is not lack of production, but lack of distribution, caused by insufficient transportation.

Coal mines are idle for lack of cars. Last year's grain, to the extent of millions of bushels, has filled to overflowing the elevators in parts of the Western grain region, or is still in the farm granaries, for lack of transportation.

That which the railroads of the country most need at the present time is relief from short, unprofitable hauls. The motor truck is the only thing that can give this relief.

The solution of our transportation difficulties is up to the railroad and the motor truck—it is too great to be solved by either one without the help of the other. —*Patriot*, Patriot Motors Co., Lincoln, Neb.

### Playing Safe

When one side in a game has obtained the advantage and merely tries to maintain this advantage without taking any further risks, it is said to be "playing safe."

This policy may succeed for a time, but presently the side which continues to "play safe" loses the power of initiative, drops its individuality and activity, and becomes incapable of proper effort.

The reason for this is simple enough.

For "playing safe" is always due to fear and eventually earns the fruits of fear. And the same is true in regard to all of the mental battles prevalent in human life. Men and institutions, after reaching an assumed position, have a way of settling down into a groove of profitless conservatism which is mental dry rot. They are tempted to "let well enough alone," or to "let sleeping dogs lie," as the sayings go, out of dread of losing what they have already attained.

An individual or organization, bereft of inspiration and enthusiasm, cannot flourish.

In this stagnant state of mind individuals often outstay their usefulness in office and institutions keep on their swaddling clothes long after they have outgrown them.

The competitor, having run a good race, and received a prize, clings to his prize, forgetting that he has other races to run and that his goal is perfection.—*Republic Radio*, Republic Truck Sales Corp., Alma, Mich.

### Rail Pay Award Will Stimulate Use of Trucks

Events in the field of motor transportation have moved so rapidly in the last few months—motor trucks have proven themselves so thoroughly in the late crises of transportation—that today the manufacture and use of motor trucks stands as one of the strongest industries in the business world.

The recent railroad pay award by the Federal Board, added to the increase in freight rates already asked by the roads before the award was made, makes certain an increase of approximately 39 per cent. in freight rates in the very near future. This is bound to stimulate to even greater activity the use of motor trucks for every possible haul up to one hundred miles in length, both on freight and passenger.

You who are using motor trucks for your own delivery problems are going to find it economical to push your deliveries further and further from your headquarters. You will find that you can compete favorably with the railroads for distances up to one hundred miles and in addition to the economy can give your customers better service, due to the congestion in railroad terminals and, too, the length of time consumed in local freight shipments.

If you are operating trucks for commercial hauling purposes, your opportunities are going to be still further increased. Up to the present you have been able to compete in rates with the railroads for short hauls. You will probably soon be able to make better rates for these short hauls and compete on equal terms on longer hauls.

The increase in passenger rates of at least one-half cent per mile, which this pay raise is certain to bring about, will stimulate a great deal the use of motor truck bus lines in competition with railroad spur and branch lines.

The motor truck as a feeder and an auxiliary of the railroads will have a bigger and broader field than ever before.

To make a profit, the railroads are going to depend more and more upon their long hauls, and they are going to cooperate with the truck routes in taking over their short hauls and acting as feeders for these freight routes.

These rapidly moving events demonstrate that motor highway transportation is only in its infancy—that it stands on the threshold of a period wherein it will assume its logical place in moving the enormous domestic commerce tonnage.

Keep the goods moving.—*Federal Traffic News*, Federal Motor Truck Co., Detroit, Mich.

### Attitude of Owner and Driver on Truck Maintenance

Through long experience the care of horses is thoroughly understood. The driver of a team feeds and waters them at definite intervals and no owner of a span of horses would hire a man who through ignorance or negligence was unwilling to give them his attention. It is just this sort of intelligent care which the owner must apply to his truck if it is to prove satisfactory, operating at a minimum cost with the least possible depreciation.

The importance of good drivers cannot be over-estimated. When operating only one or two trucks it is imperative that the driver be allowed time to properly lubricate the machine during working hours if possible, and if not, that he be paid for overtime spent in this way.

Many owners expect that if a driver works eight hours a day the truck will be on the road for a corresponding period and this obliges the operator to make all replenishments of fuel or water and such little lubrication as the truck receives on his running time. This attitude encourages carelessness, as, obviously, if the owner is not sufficiently interested in his investment to conserve it, the driver likewise will not be much concerned and is likely to feel that grease cups, the universal joints or the rear axle can go till next week or next month before he lubricates them.

The owner should provide a schedule for the driver to follow on inspection, lubrication and adjustments of his truck. Rigid adherence to such a schedule is the real secret of low upkeep.—*Acme Angle*, Acme Motor Truck Co., Cadillac, Mich.

### A Few Pointers of Saving Gasoline

Be sure there are no leaks in the gasoline tank, gasoline feed pipes and carburetor.

Be sure that the choke valve is open to the fullest extent after the engine is started.

Close up all air leaks between carburetor and engine.

In hot weather see that the carburetor shutter is open to admit a maximum amount of cold air.

See that the brakes are free and do not drag on the brake drums.

See that the wheel bearings are well lubricated.

See that the valves are properly seated and set according to the manufacturers' standard.

Do not be ashamed to insist upon getting full measure from the filling stations. It is as important to check the quantity as it is to check your change when paying for its purchase. A saving of one gal'on per week for 6,000,000 car owners would be a total saving of 312,000,000 gallons per year.—*Vim*, Vim Motor Truck Co., Philadelphia, Pa.



## Is there one best motor truck?

### *The Drivers' Answer*

(Quoted from actual interviews)

"My Atterbury has any truck I know of beat a mile."

"If you could see as many trucks as I do stalled on hills which our Atterbury takes with ease, you would understand what I am talking about."

"The Atterbury is the only truck I know that will stand hard punishment without showing it."

"On grades that would take the heart out of most trucks, our Atterbury goes through without a quiver."

"I've driven a half dozen makes of trucks and the Atterbury beats them all for satisfactory service."

"The fellow that drives an Atterbury learns to have confidence that his truck can pull through when almost any other truck will fail."

Perhaps these drivers are a trifle over-enthusiastic (as Atterbury drivers are apt to become).

But the man who drives an Atterbury every day—who sees it take hard punishment without faltering, sees it "pull out" where other trucks have to be pulled out, sees it work month after month without requiring a single adjustment—that man can hardly be blamed for his conviction that there is one best truck.

*The Atterbury Franchise is worth investigating*

**ATTERBURY MOTOR CAR COMPANY**  
BUFFALO, N. Y.

Capacities  
1½, 2½, 3½  
and 5 Ton.



SCENE—Most any big city. TIME—Noon hour.  
CHARACTERS—Atterbury Driver and Other Drivers.  
ATTERBURY DRIVER: "Come on boys—I'll show you a REAL truck!"

# ATTERBURY

MOTOR TRUCKS OF MAXIMUM SERVICE



# Metal and Rubber Markets

**Automobile Industry Denies Trade Depression. Refutes Report of Reduced Output.  
The Many Unfilled Orders Due to Limited Steel Supply**

Reports that the automobile industry is undergoing a period of depression, which rumors have been floated amid steel circles, owing to slack business and curtailing operations as a result, are meeting with much disfavor among the Detroit automobile builders. That the brisk buying of steel products used in this industry during the earlier part of the year has fallen off considerably is common knowledge to the trade, but automobile makers state that their business is just as active as ever, in fact their output is sold many months in advance.

Many instances are cited where the production schedules of many of the manufacturers are absolutely controlled by the supply of steel they are in a position to obtain from the various mills. And it is further maintained that if more steel products were available the demand would be easily one-third more than the present consumption.

## Steel Products Prices.

Per ton—Pittsburgh—

Bessemer billets .....	\$60 00	a	....
Open hearth .....	60 00	a	....
Forging billets .....	80 00	a	....
Sheet bars .....	65 00	a	....

## Sheets

The following prices are for 100-bundle lots and over f.o.b. mill:

Blue Annealed Sheets—

Pittsburgh (base) .....	6 00	a	7 00
Philadelphia .....	6 25	a	7 25
Chicago .....	6 27	a	7 27

Galvanized Sheets of Black Sheet Gauge—

Pittsburgh .....	7 50	a	8 50
Chicago .....	8 77	a	8 92

Tin—Mill Black Plate—

Pittsburgh .....	7 00	a	9 00
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## Structural Material

Structural shapes, Pittsburgh	3 10	a	3 50
Structural shapes, Phila. ...	3 35	a	3 75
Structural shapes, N. Y. ....	3 37	a	3 77

## Finished Iron and Steel

Steel hoops and bands .....	5 50	a	....
Tank plates, Pittsburgh .....	3 25	a	3 50
Tank plates, New York .....	3 52	a	3 77
Steel bars, New York .....	3 52	a	4 27
Steel bars, Pittsburgh .....	3 25	a	4 00
Rails—Standard Bessemer			
sections, mill .....	55 00	a	60 00
Stand., open hearth, mill....	57 00	a	62 00
Light sections—25 & 45 lbs..	2 45	a	3 75

## Iron and Steel at Pittsburgh

Bessemer iron .....	48 40	a	....
Bessemer steel, f.o.b. Pitts...	60 00	a	....
Skelp, grooved steel .....	3 25	a	4 00
Skelp, sheared steel .....	3 50	a	4 25
Ferromanganese (80%) .....	200 00	a	225 00
Steel, melting scrap .....	29 00	a	....
Steel bars .....	3 25	a	4 00
Wire rods .....	70 00	a	80 00
Iron bars .....	4 00	a	5 00
Plain wire .....	3 75	a	4 25
Plain wire, galvanized .....	4 20	a	4 70
Cut nails, nominal .....	6 19½	a	....
Wire nails, Pittsburgh .....	4 25	a	4 50
Steel hoops .....	5 50	a	....

OTHER METAL PRODUCTS.—Following are the prices current for brass and bronze products:

Copper sheets, not rolled .....	29 50	a	....
Copper bottoms .....	38 00	a	....
Seamless tubing, bronze .....	34 50	a	36 50
Seamless tubing, copper .....	32 00	a	....
Copper rods .....	26 75	a	27 50
Copper wire .....	22 50	a	23 00
Cut lead sheets .....	12 25	a	....
High brass wire .....	25 25	a	....
High brass sheets .....	25 25	a	....
High brass rods .....	23 75	a	....
Low brass sheets .....	27 25	a	....
Low brass wire .....	27 25	a	....
Low brass rods .....	28 00	a	....
Nickel silver, 18% .....	39 50	a	....
Brazed tubing, brass .....	38 00	a	....
Brazed tubing, bronze .....	42 75	a	....
Brazed tubing, copper .....	42 75	a	....
Seamless high brass tubing..	30 50	a	....
Seamless low brass tubing...	33 50	a	....
Sheet zinc .....	12 50	a	....

## Miscellaneous Metals.

ANTIMONY.—The market is picking up strength on buyers' activities. The demand is good and holders are confident of an upturn. One dealer sold over 250 tons the past few days. Chinese metal is now quoted 7c c.i.f. owing to higher silver, or about 7½c duty paid. The market is still 7 to 7½c, but higher levels are looked for. London broke sharply a few days ago to £52.

GRAPHITE.—The market shows very little change, and while there is really nothing to warrant lower prices, producers appear to be shading figures somewhat with a view to inducing buyers to place larger orders for immediate and future deliveries. Present quotations are as follows: Crude Mexican ore \$31.60 a ton New York; Korean 3c per lb.; Madagascar 6c per lb.; Ceylon 4c to 15c per lb.

TUNGSTEN.—There is much more inquiry in the trade as prices have now reached a level that would attract buyers. Prices are lower than for a long time and consumers as well as dealers are beginning to lay in stocks. Nominally the market is \$5 to \$5.50 for wolframite and \$6 to \$6.50 for scheelite.

OLD METALS.—The market for aluminum scrap is quiet with prices unchanged. Copper is dull but steady. Inquiries from consumers are only for small lots of crucible and No. 1 machinery composition at ¼ to ½c below selling price. Scrap lead is firmer. Smelters are only offering 8 to 8½c delivered. None is available below 8½c. Large holders demand 8½c for immediate shipment. The supply of block tin scrap and pewter dishes is limited to small quantities only while the market remains steady at previous quotations.

Aluminum—	Buying.	Selling.
Cast scrap .....	.20 a20½	21½a22½
Sheet scrap .....	.20 a20½	21½a22
Clippings .....	.25 a26	27½a28
Copper—		
Heavy machinery comp..	13¼a13½	16 a16½
Heavy and wire .....	13½a14	14½a15

Light and bottoms .....	12¼a12¾	13½a13¾
Heavy, cut and crucible..	14¼a14	16 a16½
Brass, heavy .....	7¾a 8¼	9 a 9¾
Brass, casting .....	9¼a 9½	11 a11½
Brass, light .....	7¾a 7¾	8¼a 8¾
No. 1 clean brass turn'gs	7½a 7¾	8¾a 9
No. 1 comp. turnings....	10¾a11½	12¾a13¾
Tea lead .....	4¾a 5½	5¾a 6
Lead, heavy .....	7½a 7¾	8¼a 8¾
Zinc scrap .....	4½a 5	5½a 6
Solder joints .....	10½a1	11½a12
New zinc clippings .....	5 a 5½	5 a 6½
Pewter dishes .....	.33 a34	.36 a37
Block tin, scrap .....	.41 a43	.44 a45

## Plantation Rubber Dull

**Tone Steady, However, Under Very Limited Offerings**

There has been no movement of consequence in plantation rubber recently, although there was some manifestation of interest by the shorts at a little under the market. There is very little rubber on offer, especially in near positions, while the tone of the market as a whole was steady. Quotations on ribbed smoked sheets lately were 33¼c for spot and for August arrival, 33¾c for September, 35¾c for October-December, 38¾c for January-March, and 39½c for January-June. The premium of ½c on first latex pale crepe is retained. Paras were easy and somewhat lower except island fine, the supply of which is very light. Centrals were dull and nominal.

Para—Up-river, fine .....	32¼a ..
Up-river, coarse .....	20½a ..
Island, fine .....	31 a ..
Cauchio, ball, upper .....	22 a ..
Cauchio, ball, lower .....	18¼a ..
Cameta .....	18 a ..
Plantation—First latex, crepe..	33¾a ..
Brown crepe, thin, clean....	28 a ..
Rolled, brown, crepe .....	25 a ..
Smoked ribbed sheets .....	33¾a ..
Centrals—Corinto .....	19 a ..
Esmeralda .....	19 a ..
Guayule, wet .....	24 a 25
Balata, block, Ciudad .....	*72 a ..
Balata, block, Panama .....	*50 a 51
Balata, sheet .....	*1 00 a ..
Mexican—Scrap .....	*22 a ..

\* Nominal.

SCRAP RUBBER.—Conditions in this market are still highly unsatisfactory from the sellers' viewpoint, with no prospect of an early change for the better. Boots and shoes .....

Col. H. W. Alden, past president of Society of Automotive Engineers, has to serve as a member of Federal Highway Council Transportation Committee, and also to serve on the Committee of Sub-Grade in its relation to road surfacing.



**ACCURACY**

**CLARK  
AXLES**

Conformity to *exact* scientific principles, while not apparent, determined the accuracy of the Grecian archer—similarly, exact scientific principles underlie the construction of Clark Axles for motor trucks.

**CLARK EQUIPMENT COMPANY**

Buchanan, Michigan

*Also makers of Clark Steel Disc Wheels for Motor Trucks*

***For Motor Trucks***



The Four Wheel Drive Auto Company, Clintonville, Wis., will have the Menominee line of trucks, recently acquired, handled by present distributors of FWD trucks, in conjunction with other Menominee dealers throughout the country. The Menominee line embraces 1, 1½, 2 and 5-ton models. Work on the new Menominee factory, being erected near the Four Wheel Drive plant, Clintonville, is nearly completed, and soon the reorganized Menominee Truck Company of Wisconsin expects to move its entire force of men and machinery to the new headquarters, where increased production will be possible.

The Gramm-Bernstein Motor Truck Co., Lima, Ohio, has declared a fifty per cent stock dividend out of surplus earnings, and has also voted a capital increase from \$1,500,000 to \$5,000,000, the entire amount to be issued as common stock. The company has averaged 25 per cent earnings on its common stock for the past five years.

The Motor Wheel Corp., Lansing, Mich., has declared a dividend of two per cent on common stock to stockholders of record of August 7. Earnings for the first three months of the present fiscal year, beginning March 1, are above \$300,000. More than \$12,000,000 in orders are on the company's books, and monthly earnings are above \$100,000.

The Green Engineering Company, Dayton, Ohio, automotive parts and motors, aluminate pistons and spark plugs, has moved into new fireproof quarters. This company is building to special order the C. R. G. Special, wire wheels, a gasoline mileage of 18, and an oil mileage of 1000 miles.

The Miller Rubber Co., Akron, Ohio, has sold its dipped goods department to the Seamless Rubber Co., New Haven, Conn. increased automobile tire business is given as the reason for discontinuing a department which the company has operated continuously for twenty-seven years. Only the dipped goods line is discontinued, all other lines, including tires and some surgical supplies, will be as completely produced as ever.

Hamilton Motors Co., Grand Haven, Mich., makers of Apex trucks, announces through A. L. Martin, general sales manager, that district sales managers will be located throughout the United States. Two recently appointed are D. C. McIntire, for Pacific Coast, and W. E. Kalamian, for Kansas City district.

The Ajax Rubber Co., Inc., New York, reports business for six months ending June 30, 1920, greater in volume than for any similar period, and exceeding the first six months of 1919 by about 16 per cent net. The entire dividend for 1920 has thus been earned, and a surplus of \$3,000,000 is on hand, after deducting all dividends paid to date.

Detroit Brass & Malleable Works is the new organization (consolidation), of Detroit Valve & Fittings, and the Detroit Brass Works. There is no change in policy, management, or personnel.

The Waukesha Motor Co., makers of heavy duty engines, has increased its capital from \$1,000,000 to \$2,000,000, to be absorbed largely by original stockholders, the proceeds to be used for financing expansion of business.

The U. S. Light and Heat Corp., Niagara Falls, N. Y., held its annual stockholders' meeting August 11. The directors' meeting, which followed, elected J. N. Willys, board chairman; J. N. Willys, chairman of the executive committee, and H. I. Shepard, chairman finance committee.

The Timken-Detroit Axle Company's balance sheet for six months ending June 30 shows total assets of \$25,533,438, and a surplus of \$11,459,444. Against this there is \$5,000,000 preferred stock and \$2,984,900 common stock.

## Factory News and Capital Increases

Moore Vehicle Co., Danville, Ill., and Moore Motor Vehicle Co., South Dakota, has had James H. Elliott, Danville, Ill., appointed temporary receiver, a temporary restraining order against the officers having been granted by the Federal court upon petition of five Indiana stockholders. The officers claim solvency and property of \$475,000, with liabilities not exceeding \$175,000.

The B. F. Goodrich Rubber Co., Akron, Ohio, has guaranteed its prices until November 1, a date without particular significance, since it marks the end of many contract selling seasons.

The Vulcan Motor & Engineering Co., Ltd., has its director and general manager, Walter E. Walker, in Montreal to bring the British Vulcan truck to the attention of Canadian manufacturers, dealers and financiers, to the end the establishment of a branch factory in Montreal for Vulcan trucks. The present establishment at Southport, England, employs 2500 people, and produces 100 to 150 trucks weekly.

The Cameron Motors Corp. has secured a temporary injunction in the Superior Court of Fairfield County, Conn., restraining the Holmes Mfg. Co., Shelton, Conn., from manufacturing or selling an air cooled engine embodying the essential features of the product of the Cameron Motors Corp.

The Reynolds Spring Co. is the new name of the company heretofore known as the Jackson Cushion Spring Co., Jackson, Mich.

Gray Motors Corp., the recent purchaser of the Gray Motor Co., Detroit, Mich., will continue the manufacture of the Gray truck and tractor engine, and additionally, will manufacture a four-cylinder car. Frank F. Beall heads the concern, and will introduce the knock-down method of shipping cars to the subsidiary companies in distributing districts. Ten cars, it is anticipated, can be shipped in a freight car, instead of three. It is claimed that the knocked-down car, because of special design, can be assembled in less than one hour. Production is expected about February, 1921, and the price of the car will probably be well under \$2000.

The Chevrolet Motor Company has created Zone 20, for the Pacific Northwest, with Portland, Oregon, as headquarters, according to announcement by C. M. Steeves, assistant sales manager of the Chevrolet Motor Co., of California. The new zone includes Oregon, Washington, Idaho, and western Montana, and M. D. Douglas will be manager of the zone. A Northwest office and distributing headquarters building, with 60,000 sq. ft. floor space, will be erected in Portland.

The Black & Decker Mfg. Co., Towson Heights, Baltimore, Md., manufacturers of portable electric drills, announce the issue of \$250,000 preferred 8 per cent cumulative stock for the benefit of their employees. This stock is the same as owned by the original stockholders and carries with it a 25 per cent bonus of common stock, so that for every four shares of the preferred, one share of the common stock is given free. Employees are favored as to payments according to their length of service with the company.

The Bethlehem Motors Corp., Allentown, Pa., in addition to its big production program of 20,000 Bethlehem trucks per year, has undertaken an order for 10,000 light passenger cars for the English market. A sample car is now on its way to England for trial. It will be the four-passenger type that is popular in Europe, and will list at about \$3000.

Midwest Engine Company employees have purchased \$128,000 of the company's preferred stock. The company recently increased its capital stock to \$8,000,000 for general expansion. Carl Fisher and James Allison, formerly of the Prest-O-Lite Company, and officials of the Indianapolis, Ind., Motor Speedway, have each purchased \$1,000,000 stock in the reorganized Midwest company.

The Dunlop Rubber Co., of England, it is reported, has declared a ten per cent stock dividend, and has increased its capital from 4,500,000 pounds sterling to 15,000,000 pounds sterling.

General Motors Corp. is reported to be negotiating for large tracts of timber land and a site for an enormous enterprise in the hardwood belt of northern Wisconsin and upper Michigan, to secure a complete supply of all wood materials needed. Norway, Mich., is the reported center, and the prospective holdings are said to include, like those of the Ford company, water power, iron ore, and vast timber areas.

The Marvel Machinery Company, George S. Loudon, sales manager, Minneapolis, Minn., has had its cylinder reborer machine taken over by the Fairbanks Company, New York, as exclusive sales and distributing agents, both in the United States and in foreign countries. The Marvel company also manufactures the Marco finished and semi-finished replacement pistons, and in order to produce them on a larger scale the company has purchased several acres and plans are being drawn for a factory building, which will also house the executive offices.

The American Hammered Piston Ring Co., through sales manager Walter P. Coghan, reports the manufacture, sale and delivery of 1,750,000 rings a month, a figure the company has maintained steadily for a year.

The Westinghouse Electric & Mfg. Company's offer of additional insurance in its insurance and savings plan has been taken advantage of by more than 90 per cent of the employees at East Pittsburgh, Pa.

The Lavine Gear Co., Milwaukee, Wis., expects to be using the third large addition to its factory by October first.

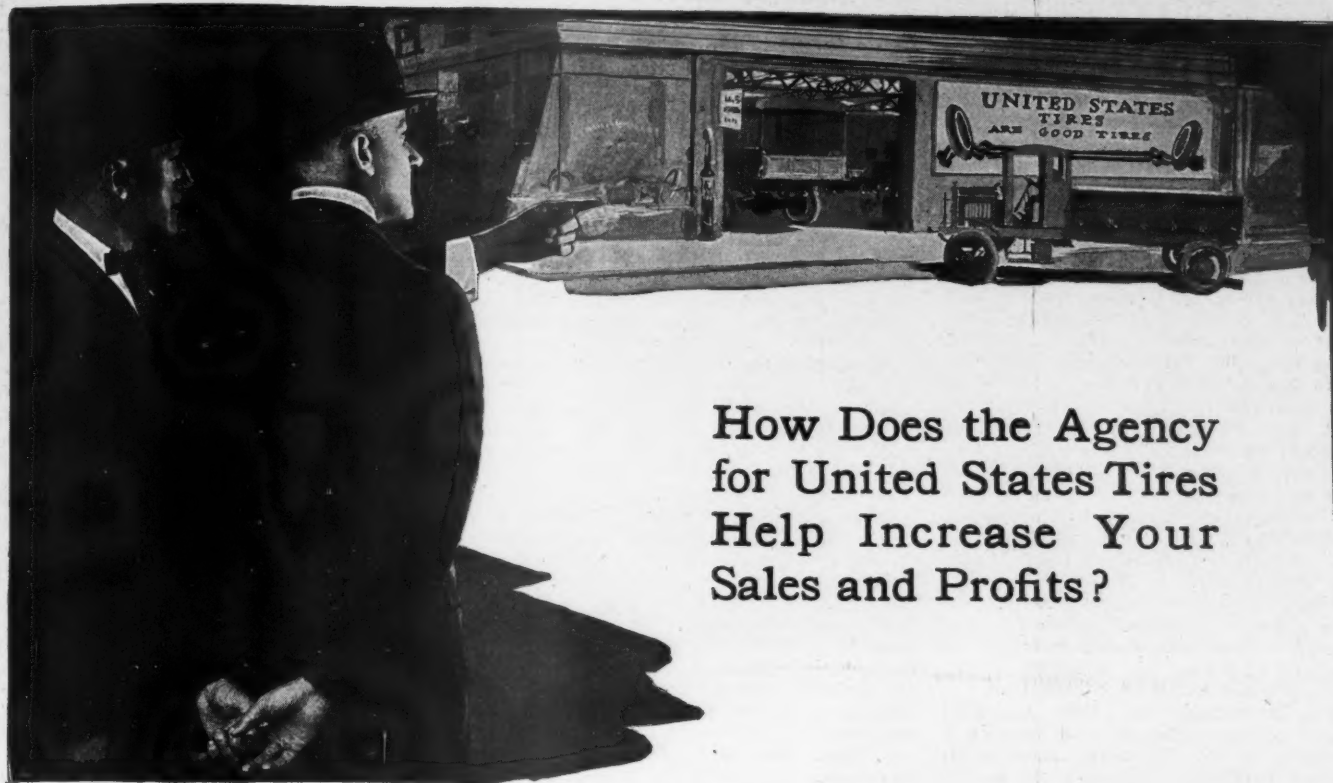
The Autocar Co., Ardmore, Pa., will offer 8000 shares of new stock for present holders at par. This stock would make the paid in capital \$5,000,000.

The Fisk Rubber Co. sales for the first six months of 1920 were \$27,000,000, or 32 per cent in excess of the \$20,437,000 for the first half or last year.

Wellman-Seaver-Morgan Company, Akron, Ohio, announce the consolidation of its manufacturing sales and engineering sales departments, with H. P. Glidden as sales manager, and E. R. Kenner, assistant sales manager.

Mr. Hugo Hoffstaedter, who organized the Polack Tyre & Rubber Co. in 1912, has resigned as its president, having disposed of his interest in this business to the Buckeye Rubber Products Co., Cleveland, Ohio. This concern will continue the manufacture of "Polack Tyres" under the same trade name, with largely increased facilities.

The Great Lakes Forge Company, which is the new interest acquiring the stock of the Cochran Mfg. & Forging Co., formerly located at 7800 Woodlawn Ave., Chicago, Ill., has built a new plant on an eight and one-half acre site, the first unit being a 20-hammer shop, 50 x 400. Forgings up to 20 lb. can now be produced. The company's sales will be handled through West & Den-net Co., 14 East Jackson Boulevard, Chicago, and Moses & Dennet, 80 Washington Blvd., Detroit, Mich. G. C. Hodgson is president of the new company; W. C. West, vice-president, and W. F. Scheffler, secretary-treasurer.



How Does the Agency  
for United States Tires  
Help Increase Your  
Sales and Profits?

**T**HROUGH the sale of UNITED STATES TIRES you are brought in touch with quality buyers who look beyond price in search for good tires and honest service rendered.

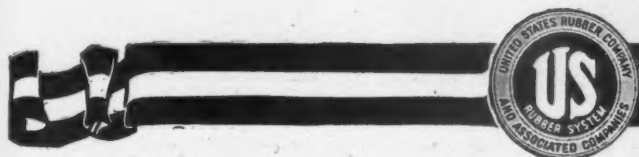
U. S. Pneumatic Truck Tires are advertised to thousands of prospects nationally and in your own locality—Mileage records prove their popularity, and where *increased speed—lower operating costs and traction* are necessary they prove their value.

The UNITED STATES TIRE Agency will attract buyers to your service station for repairs, replacements and spares. Ally yourself with the U. S. Tire Company, whose resources and expert tire advice cannot help but mean increased sales and profits to you.

Specify 'NOBBY CORDS' on your new trucks.

**U.S. Pneumatic Truck Tires**

**United States Rubber Company**





## Personal Items

A. F. Bassett has become sales engineer for the Hyatt Roller Bearing Co., Detroit, Mich., and surrounding territory. He is a graduate engineer of Yale University, and has been with the Hyatt Company for several years, and his work will be with the motor bearings division.

George T. Bryant is director of foreign sales for Robert H. Hassler, Ind., Indianapolis, Ind., shock absorber maker. Mr. Bryant resigned from the Hide Leather & Belting Company, and his new duties take him to Europe in September, and later to South America.

R. L. DeVoe has been appointed manager of the Chicago branch of the Madison Tire & Rubber Co., New York.

Roy S. Davey has been appointed general sales manager of Graham Brothers Sales Co., New York. He was formerly general sales manager of the Bethlehem Motors Corp., Allentown, Pa.

Franklin G. Hill, for several years eastern manager for the Republic Rubber Co., has taken the eastern sales management for the G. Kenyon Company, Inc., Brooklyn, N. Y., makers of tubes and Kenyon cord tires.

George B. Hodges has been appointed manager of the industrial and production department of the McVicker Engineering Company, consulting engineers, 716 Metropolitan Life Building, Minneapolis, Minn.

William D. Horne, Jr., formerly with the Locomobile Company of Bridgeport, Conn., has joined the Eaton Axle sales force, of the Standard Parts Co., Cleveland, Ohio.

Frank C. Kip, formerly sales promotion manager of the Packard Motor Car Co., has disposed of his interest, and resigned as president of, the Automotive Products Corp., Calif., to become general manager of the George D. Bailey Co., Chicago, Ill., service division for Shafer roller bearings. He will have entire charge of sales and advertising.

A. H. Leavitt, long with the B. F. Goodrich Co., sales department, and more recently with the Akron Rubber Mold & Machine Co., is now general sales manager for the Amazon Rubber Co., Akron, Ohio.

James T. Lee has joined the sales engineering staff of the Southwark Foundry & Machine Co., Philadelphia. For several years Mr. Lee was vice-president in charge of sales for the Hanna Engineering Works, Chicago, Ill.

Donald S. Michelsen, formerly general manager of the Worcester Pressed Steel Co., Worcester, Mass., has become general man-

ager of the Globe Machine & Stamping Co., Cleveland, Ohio. A. F. Schroeder, who has been general manager for twenty years, will continue to hold the office of president.

W. A. Olson, president of the Four Wheel Drive Auto Co., Clintonville, Wis., with D. J. Rohrer and C. F. Folkman, members of the board of directors, have gone to England in the interests of the company's foreign business. They will make a study of the truck situation.

M. L. Pulford has been appointed service engineer in charge of the service department of the Commerce Motor Car Co., Detroit, Mich. He has been with the company seven years.

C. E. Pumphrey, formerly assistant sales manager, has been made general sales manager, in place of H. M. Bacon, resigned, of the McGraw Tire & Rubber Co., Cleveland, Ohio. He has been with the company seven years. Other appointments in the company's sales personnel include W. H. Hurley, hitherto manager of the New York branch, now made assistant sales manager, with headquarters at Cleveland. W. A. Brady becomes New York branch manager. G. E. Bovis, Cleveland manager, goes to Chicago, H. G. Couturier being transferred from Chicago to general office headquarters as sales promotion manager, a newly created office. R. I. Winterringer, Boston, Mass., takes charge of Cleveland territory, and W. P. McGlynn goes to Boston.

J. Elden Shaw, formerly sales manager of the Savage Tire Sales Co., Des Moines, Ia., has been appointed district manager of the Standard Four Tire Company's Pacific Coast business, with direct charge of the Los Angeles branch. Mr. Shaw has been closely connected with the coast tire business for ten years.

Herbert Small has been made manager of the export division of the Traffic Motor Truck Corp., St. Louis, Mo. He was assistant export manager of the Republic Motor Truck Co., Alma, Mich.

O. S. Tweedy, formerly with the Diamond Rubber Co., and the United States Tire Company, will take over the western sales for the G. Kenyon Company, Inc., Brooklyn, N. Y., makers of tubes and Kenyon Cord tires.

K. L. Zimmerman has been appointed advertising manager of Henry Disston & Sons, Inc., Philadelphia, Pa.

## Correction

On page 104 of our August issue the portrait of Joseph L. Hardig was incorrectly captioned. Mr. Hardig is the advertising manager, Motor Bearings Division, Hyatt Roller Bearing Company, Detroit, Mich.

## Association News

The St. Louis, Mo., Auto Trade Association and their friends, numbering more than 900, enjoyed the third annual river excursion given by the Motor Accessory Trade Association on August third. Holders of lucky admission tickets received 65 cash and 150 accessory prizes.

The St. Louis, Mo., Automobile Club will inaugurate a motorcycle patrol of roads outside the city, that aid may be given motorists having mechanical troubles. Six expert mechanics will be on the patrols.

The Bloomington, Ill., Auto & Tractor Assn. demonstrated the value of concerted action recently by attending a meeting of the city council in a body and protesting a city ordinance that was railroaded through the council, imposing a tax of \$100.00 annually upon gasoline filling stations. The council reduced the tax to \$25.00, saving the association members cost of five years' dues.

The New Haven, Conn., Automotive Dealers' Assn. held a clam bake August 10th. The after-dinner speaker was Dwight L. Chamberlain, vice-president of the First National Bank, who spoke upon the banker's view of the automobile business. He stressed strongly the fooling of himself by the average dealer on the handling of used cars, and expressed the conviction that he suffered loss from this part of his business.

P. H. Brockman, president of the St. Louis Automobile Manufacturers' and Dealers' Association, characterizes as "one of the most unreasonable acts that has ever been introduced into any state" the proposed law, said to be ready for introduction into the next General Assembly of Arkansas requiring "vendors of motor vehicles to establish branch houses or stations for the supply and distribution of parts."

The National Automobile Chamber of Commerce, Inc., New York, to give even broader representation to matters directly affecting the truck end of the automobile industry, has increased the number of representatives on the National Motor Truck Committee from seven to nine members, and President Charles Clifton announces the following appointments: Windsor T. White (White), Chairman; George M. Graham (Pierce-Arrow), Victor L. Brown (Sterling), M. L. Pulcher (Federal), R. H. Salmons (Selden), Ray C. Chamberlain (Packard), A. J. Whipple (Diamond T), D. S. Ludlum (Autocar), D. C. Fenner (Mack), F. W. Fenn (N. A. C. C.), Secretary. This committee meets on the first Tuesday in each month, which is the day previous to the directors' meeting.



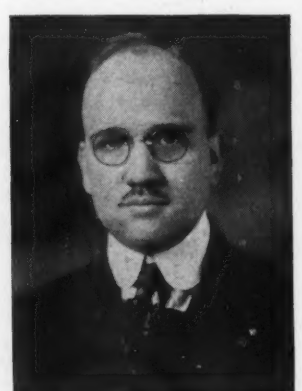
**W. J. Burns**  
Haulage Analysis Bureau, Oneida Motor Truck Company, Green Bay, Wis.



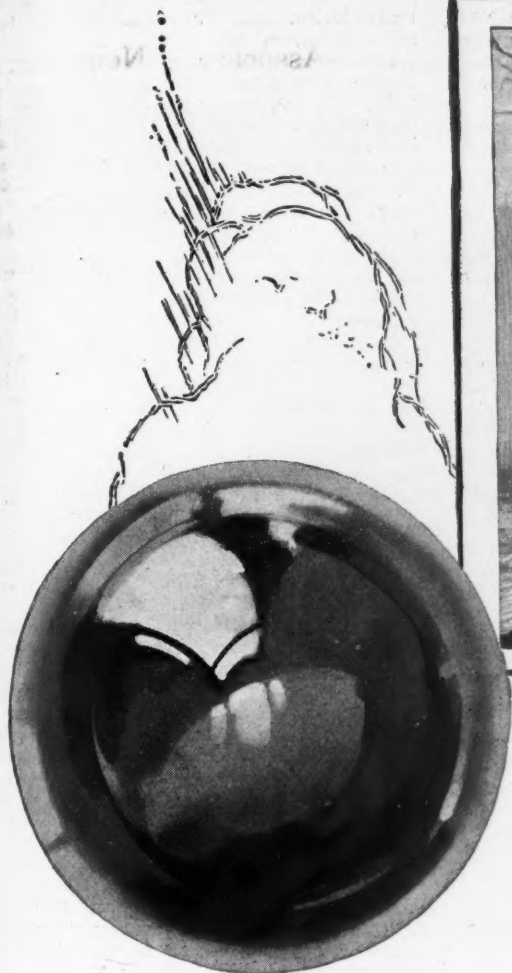
**H. F. Wardnell**  
President Briscoe Motor Corp., Jackson, Mich.



**L. E. Wagner**  
Sales Manager Chicago Oneida Truck Company, distributors of Oneida trucks, Chicago, Ill.



**J. H. Barnett**  
Advertising Manager, Robert H. Hassler, Inc., Indianapolis, Ind., manufacturers of Hassler Shock Absorbers.



*The Class "B" Army Truck*

## The Class "B" Army Truck

The resiliency to endure, day after day, the shocks of rough roads and constant vibrations, in transporting supplies, comes from ball bearings working on steel balls.

Years of intensive research have produced Hoover Steel Balls of such perfect roundness and fineness of finish that they cushion the stress and the strains of rough roads and vibrations.

**HOOVER STEEL BALL COMPANY**  
Ann Arbor Michigan



# HOOVER

## STEEL BALLS





## New Incorporations

The Ardrea Auto Supply Co., Painesville, Ohio, has been chartered with capital of \$100,000 to manufacture tractors and supplies for motor cars and trucks.

A \$2,500,000 corporation is being organized at Sisterville, W. Va., to manufacture a transmission and gear system invented and patented by Benj. F. Webb, vice-president of the Sisterville Acetylene Welding Co., and Andrew J. Karl.

Detroit & Ironton Railway Co., through attorneys representing Henry Ford, has filed an application with the Interstate Commerce Commission, Washington, D. C., for authority to issue \$1,000,000 in capital stock, as lessee for the Detroit, Toledo & Ironton Railway, the Ford interests desiring to assume the liabilities of the D. T. & I., which has been operated unsuccessfully since its incorporation in 1914. Better service for shippers and passengers is planned.

The Standard Rubber Co., capitalized at \$5,000,000, will erect a tire factory in New Orleans, La., and be in production by January, 1921, according to announcement of I. J. McGee, secretary and general manager. The firm plans to make a new puncture-proof tire, invented by G. W. Gish, superintendent of the Doss Tire Company, Atlanta, Ga. The puncture-proof feature is the casing, which is of alternate fibre and rubber, lined with a black rubber composition, one quarter inch thick, soft and pliable, which will stretch a good deal before giving way to anything tire may pass over.

The Garfield Motor Corp., Dover, Del., has been incorporated for \$1,000,000.

Lomer Armored Tire Co. of New England, Boston, Mass., has been incorporated for \$500,000, as tire dealers.

The Automotive Trailer Corp., Springfield, Ill., has been formed to manufacture trucks and trailers, with capital stock of \$125,000. W. B. Jess is president, and S. M. Lieda-brand, vice-president and general manager.

The Gerlinger Electric Steel Casting Co., West Allis, Wis., is the corporation with \$500,000 capital formed by the merger of the Gerlinger Steel Casting Company, and the Gerlinger Electric Steel Foundry Company.

The Steam Bag Corporation, 1545 Broadway, Denver, Col., incorporated with a capital of \$150,000, has been formed to manufacture the "Twentieth Century Steam Curing Bag," which can handle 6, 7, and 8-inch pneumatic truck tires. The company holds basic method patents in the United States, and in Europe.

## New Agencies

The Tire Service Company, Dallas, Texas, has been appointed distributors for the India Tire & Rubber Co., Akron, Ohio. Temporary headquarters have been opened at Pearl and Commerce Streets. H. M. Pavey is vice-president and general manager.

The Locomobile Company's Philadelphia branch now controls the distribution of the Mercer, additionally to the Locomobile, in eastern Pennsylvania, southern New Jersey and all of Delaware. This branch is managed by Oscar Coolican, who will establish dealers throughout the entire territory.

The E. W. Clark Motor Co., Fond du Lac, Wis., will cover practically the entire state for Maxwell and Chalmers cars, with headquarters at 450-460 Jackson Street, Milwaukee. George H. Scott is manager of the Milwaukee house, but will spend half his time in Fond du Lac.

The Samson Tractor Co., Janesville, Wis., will build a 70x200 branch building in Memphis, Tenn., construction to begin at once.

J. G. Roberts, for three years general manager of the Chicago branch of the Nash Sales Company, has received the Nash franchise at Philadelphia. D. T. Vriesema, a veteran distributor, succeeds Mr. Roberts in the Chicago Nash branch.

The Chanslor & Lyon Co., operating along the entire Pacific Coast, has opened its eighth permanent branch building, costing \$55,000. It is located in Spokane, Wash.

The Nash Motor Co., according to announcement of William Chilcott, northwestern district manager, at Seattle, Wash., will soon open twelve additional suburban agencies in the Spokane, Wash., territory.

The National-Monroe Sales Co., a new distributor, will handle National and Monroe cars in north Texas and the Panhandle. K. M. Watson is secretary and sales manager. The concern is at Commerce and Market Street, Dallas, Texas.

## Removals and Trade Changes

The Chicago Solder Co. has moved its offices and factory to its new building, Wrightwood, Keeler and Tripp Aves., Chicago, Ill.

The Jacquet Motor Corp., because of the raw material supply conditions, and because 80 per cent of its parts is made in or near Milwaukee, has located its plant in Manitowoc, Wis., where it will manufacture a two-ton worm drive truck, using a Wisconsin engine, and the worm drive axle of the Wisconsin Parts Co. The factory also makes the Jacquet flyer, equipped with a 95 hp. four-cylinder engine, that has driven stock cars 92 miles an hour.

The New York Overseas Co., Inc., exports and imports, has moved from 17 Battery Place and now occupies the entire eighth floor of the new Kerr building, 44 Beaver Street.

## Trade Literature

The Hell Company, Milwaukee, Wis., recently issued a new pamphlet containing complete and compact information in the form of illustrations, generalities and specifications. It is known as the "Quality," and is designed to aid dealers to help prospects quickly determine the adaptability of Hell tanks, bodies and hoists to any particular kind of work the prospect may be interested in.

The Spark in the Transportation Problem is a copyrighted, illustrated, exquisitely printed little booklet on "the tremendous part the ignition spark plays in modern transportation." It contains a list of motor truck manufacturers, and also manufacturers of farm tractors, portable engines and passenger cars, using Elsemann magnetos.

The Warner Gear Company, Muncie, Ind., issues an interesting and attractive 63-page booklet giving the history, present status, and predicted future of the company. The booklet is profusely illustrated with views of plant, manufacturing operations, and the attractive city of Muncie.

Transport Headlight is the new official house organ of the Transport Truck Co., Mount Pleasant, Mich. Published primarily to assist distributors and dealers in Transport merchandising, it contains news of general interest in the automotive world. F. L. Edman, advertising manager, is editor.

Pointers to Profits, published by the Acme Motor Truck Co., Cadillac, Mich., in its 1920 edition, contains 40 pages of specifications, and excellent illustrations, with a price list, of twenty models, and body equipments. A good many topics of interest to truck users are touched upon, such as type of drive,

radius arms and torque rods, location of transmission, radiator mounting, and balanced construction.

Science in Industry, published by M. H. Avram & Co., Inc., 360 Madison Ave., New York, is a beautifully printed booklet of 26 pages upon industrial engineering, the special province of the company—the elimination of waste in industrial manufacture, whether in money, time or materials.

The Eveready Instruction Book, issued by the Oxweld Acetylene Company, 3640 Jasper Place, Chicago, Ill., is a treatise on everyday oxy-acetylene welding and cutting. It contains 55 pages, with illustrations and drawings, and is distributed free.

Genuine Delco and Remy Electrical Parts is the useful catalog now being distributed by United Motors Service, Inc., and simplifies the ordering of the more commonly used service parts. It is illustrated. A copy may be obtained from any one of the twenty-two branches, or 200 authorized distributors, or by addressing general office, Detroit, Mich.

The Parrett Tractor Co., Chicago Heights, Ill., issues three folders of exceptional point and interest, concerning the Parrett industry, the Parrett 15-30 three-ply tractor, and the Parrett speed truck. Thirty-three detailed tractor specifications are given; truck rapid transit for city, and country, is considered, and the strength and responsibility of the Parrett organization is impressively shown by sketches, with portraits, of eleven executives. The entire conception of this trade literature is an excellent one. Vincent Bendix, inventor of the Bendix drive for self-starters, owner of the Bendix Engineering Works, and the Automotive Research Laboratories, South Bend, Ind., is president; Robert Barbour is vice-president and chairman of the board of directors. He is also president of the Barbour Flax Spinning Company, and a director in many other concerns. George A. Gibson is vice-president and general manager. Curtis B. Bruce is treasurer, widely known in financial circles. Russell A. Reed is vice-president, of Russell A. Reed, Inc., 30 Church St., New York, and head of the Parrett export department. Walter J. Buettner is secretary, also secretary of the Bendix Engineering Works. Robert C. Webster is works manager, formerly with Hadfields, Ltd., Sheffield, England, and Urquhart, Lindsay Co., Ltd., Dundee, Scotland. Eugene F. Sanders is director of tractor sales; for seven years equipment sales manager of the Central Locomotive & Car Works. Herbert L. Schriach, director of truck sales, has held important sales and advertising managerial positions elsewhere. F. B. Hubbard is engineer, with ten years' general experience in designing and manufacturing automotive products. Joel N. Levin director of service, and with Parrett organization a long time.

The Missouri Good Roads Federation has a live committee in St. Louis that expects to raise \$75,000 in St. Louis towards carrying on the campaign for the proposed \$60,000,000 roads bond issue. Every county will be covered by the publicity work. Enameled medallions will be sold at \$2 each to the 45,000 automobile owners in the city. The medallions, 4 in. in diameter, will be attached to car radiators. They are white, with a red border, and blue letters: "Lift Missouri out of the mud" and "Vote for Good Roads Amendment No. 6." Business firms have ordered 100, and even 1,000 medallions, in co-operation with the committee. A similar campaign has been started in Kansas City, where at least 25,000 medallions will probably be sold.

# The Resiliency is Built in the Wheel

Successful  
Motor Truck  
Dealers

and

Sewell  
Cushion  
Wheels

Sewell Cushion  
Wheels make  
solid tire mile-  
age unusually  
high; operating  
costs unusu-  
ally low.

Their resil-  
ience is un-  
like any  
other—it is

Permanent

Sewell Cushion Wheel Co.,  
Detroit, Mich.

Gentlemen:

It will undoubtedly be interesting for you to learn of the result of our investigation of the successful operation of a number of Republic trucks equipped with Sewell wheels, which are operating in our territory.

These trucks which we have been watching closely are operating in various lines of business, such as the General hauling, Moving & Storage, Wholesale Oil delivery and Farming. The owners invariably say that operating costs are reduced and loads are carried with no damage to perishable goods hauled.

We have yet to hear of the owner of Sewells who is not thoroughly sold on them. Sewell Cushion Wheels minimize our free service and also customer's service bills to a considerable extent. We, therefore, recommend your product to all our dealers very strongly.

We wish also to take this means of thanking you for your co-operation given us thru your representative, Mr. S. W. Bartlett, who has rendered us valuable assistance. Wishing you every success, we are,

Yours truly,  
THE SWENSON AUTO CO.  
Per *Geo. Stimball*  
Sales Manager



Sewell Cushion Wheel Co., Detroit



# Seattle Motor Freight Terminal System is Model of Efficiency in Handling Business

Regularly Incorporated Terminal Company With Twenty-one Independent Lines. Between Eighty and Ninety Trucks Depart Daily Over Long Routes. Company is Building a \$150,000 Terminal of Greater Capacity

By A. V. COMINGS

**T**WENTY-ONE separate motor truck express companies, operating a total of over eighty trucks, and loading all their machines at a central jointly-owned terminal depot in the heart of the Seattle business district, are now giving Seattle and all its contiguous territory a daily express service superior, I believe, to similar service from any other city in the country. In organization, in efficiency of operation, and in the results achieved, the Seattle motor freight service is ahead of anything of its kind that has come under my observation throughout the United States.

The territory served in a thoroughly organized, responsible way, includes not only the oddly shaped structure of Seattle's own municipal limits, but a strip of country forty miles to the north and south and about fifteen miles wide, up into the very foothills of the Cascade Mountains, and, in addition, an individual route to Aberdeen, 114 miles away, around the upper end of Puget Sound, on the tip of Gray's Harbor, an inlet from the Pacific Ocean. The trucks serving this large area arrive at the terminal and depart like so many express trains, adhering strictly to schedule. It is this absolute reliability that has gradually built up this system, coupled with a service that the railroad companies could not possibly duplicate.

## Organization of Travel

The present splendid system is a tribute to the far-sighted and capable management of J. L. Bracklin, the organizer and manager of the Auto Freight Co., Inc., which is the company handling the

terminal facilities. This company, capitalized at \$75,000, was incorporated November 30, 1917, and the stockholders are the various individual motor companies using the terminal. Each must take \$3,000 worth of stock, and at present twenty-one companies each hold this



J. L. Bracklin

Manager of the terminal company, and a big man in motor freight transportation circles

amount in the company, the remainder being held as treasury stock. Ownership of this stock gives each company the right to full use of the terminal, and participation in the management of all terminal matters.

A flat rate charge per truck pays all the expenses of the terminal, so that each company pays only according to the amount of business it is doing. This

flat rate amounts to about 5 per cent. of total freight charge in most instances.

Motor express rates to the shipper follow very closely the western classification freight rates used by the railroads, the exceptions usually being freight that is particularly bulky, or on which the railroads have given a preferential rate for one reason or another. For instance, the railways give a low rate on farm machinery as an inducement to settlers along their lines, and on goods such as this the motor express companies find it necessary to charge a higher rate.

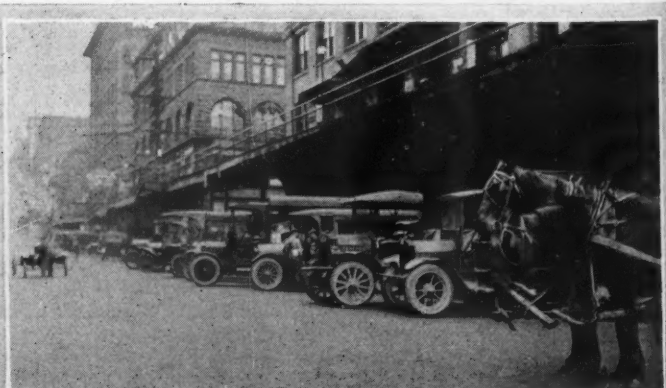
All trucks are bonded and goods are insured, so that there is no loss to the shipper. Claims from shippers for damages in transit are investigated and settled weekly, Manager Bracklin being very much opposed to the railway method of putting off settlement to the very farthest possible time. Quick and amicable settlements have done much toward getting the good will of shippers, and increased business has resulted in a very definite measure because of this policy.

Whenever a question of damages arises between the shipper and the consignee, Manager Bracklin is always ready to step in and assist in the happy adjustment of the claim on the basis of fairness to all.

"It is part of our duty as a common carrier," says Mr. Bracklin. This attitude has helped materially in bettering relations between those using his lines.

## Efficient System Employed

A standard bill of lading is used, covering all shipments, the shipper retaining two copies, the terminal office one, and the consignee one. All freight charges



There's a Line-up of Trucks at the Terminal All Day Long Like This, as May be Seen From the Right Illustration; Also Note the Marion Street Loading Platform on the Left

[The following advertisement, addressed to a situation of importance to the Automotive Industry and to the Nation at large, was published by The Buda Company in The Saturday Evening Post September 11, 1920]

# Are You Thinking Right About the Motor Truck?

THE prosperity of every business and of every family in this country is affected by the present-day problem of transportation.

On many farms, the wheat of the second largest crop ever raised on this continent is stacked in the fields, and covered with tarpaulins for temporary protection, because there is no way of getting it to market.

Meanwhile, the great city populations look toward the farms for relief from high prices, from scarcity, from want itself.

At the mines, the storage banks are piled to overrunning with the fuel for homes and factories. In the cities, the coal bins are empty.

Could any situation be more vital to the welfare of the nation?

No one of our great practical means of transportation can be held responsible. A national failure to grasp the basic importance of transportation is to be blamed.

Our first duty is to start thinking right about our every agency of transportation. Railroads must be restored to normal carrying efficiency. Waterways must be developed. Highways must be utilized to their full capacity. All must be employed co-operatively.

THE motor truck is a carrier of goods. It transports as much as five to eight tons at a load. It is fast. It is more enduring and capable than team and wagon, more flexible than train and steamship. It serves individual needs. It is economical. It creates value, and therefore wealth.

Because of its economic utility, we have motorized hauling between factories, depots and docks; motorized delivery between stores and homes; motorized freights between cities, and have a motorized parcel post in the rural districts. Every run of every efficiently operated truck is an economic profit.

One of the motor truck's most valuable services is in co-operation with the railroads. Thus the truck is at once a feeder of business to the railways and the modern force for quick relieving of railway terminal congestion.

SURELY, the economic status of the motor truck is established. What is required is that the recognition which it has earned be granted ungrudgingly—by men of affairs, bankers, manufacturers, retailers, farmers, the public.

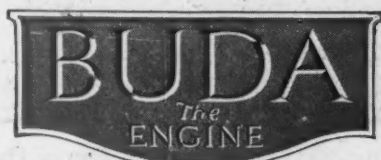
Everyone should understand that motor trucks are bought and used solely for their ability to add value to the things they move. Everyone should appreciate that when the use of motor trucks is encouraged, by so much is the transportation power of the nation expanded. A limitation placed on the legitimate purchase and use of trucks is a limitation on transportation, and therefore on all industry and commerce.

This is particularly true in the case of the small business man, for whom the acquisition of a truck often spells opportunity to succeed in a large way. If an over-ambitious individual here and there mistakes the possibilities for him in the ownership of a truck, it is a harsh rule that would condemn a hundred others to forego profitable operation.

The records of responsible automotive dealers show that among their most stable customers are men who started their truck fleets from very modest beginnings.

The motor truck deserves the high place which it holds today among serviceable means of transportation. It has earned that place. It is ready to do even greater things. Especially in the transportation crisis of today, the motor truck should have every opportunity to serve industry, agriculture, and, through them, the entire nation.

THE BUDA COMPANY, HARVEY CHICAGO ILL.  
ESTABLISHED 1881







Three Other Trucks Used on Different Lines

are prepaid to the Auto Freight Co., Inc., the Seattle terminal organization.

When the driver takes his load out from the terminal, he is furnished with a "driver's sheet," or way bill, bearing a number, shown herewith, Fig. 1. On this sheet is written the consignor's and consignee's name, the destination, a brief description, weight, etc., for each shipment. As the bill of lading copy accompanies each shipment, this description is very brief. The consignor must sign for each shipment received, this signature constituting evidence that he has received the freight shipped.

The driver turns these way bills in at the end of his trip, and they are filed numerically. At the end of each week each driver turns in a written report, giving the number of each way bill he has turned in during the week, the amount of freight due him on each, and the terminal company then gives him a check covering all that is due him for that week. A simple system, calling for very little bookkeeping, and accurate to the dollar. It has worked very successfully with the Seattle terminal.

#### Check Against Dispute

In case of any dispute, the way bill files and the bill of lading files show all details of the entire transaction, so that the matter may be checked up satisfactorily on short notice.

There is no rate cutting among the various companies, and practically no competition from outside truckers, for it has been pretty thoroughly established among the truck owners of the territory that certain rates must be secured, or the truck owner fails.

The State of Washington has no jurisdiction through a public service commission over truck lines of this character under present State laws, but Manager

Bracklin has furnished much data to the State covering the operation of his company's lines, and a law will undoubtedly be enacted soon to foster and promote the proper highway transportation of goods by motor truck under State supervision.

The present terminal of the company is at the corner of Railroad avenue and Marion street, in the very heart of the wholesale and shipping district, and facing some of the main piers of the waterfront. The company has 7,000 sq. ft. of space, which is not nearly enough. Only by perfect system and a constant movement of goods, in and outbound, can the present quarters stand the strain. The daily average is between 275 and 300 tons, practically all of which is brought to the terminal by the trucks and teams of Seattle shippers, to be taken away on schedule time by the trucks covering the various routes. The terminal is one of the busiest places it has ever been my fortune to see.

Manager Bracklin has three assistants in his tiny office, and these, with five freight handlers, take care of the handling, recording and office work incident to the stream of from 275 to 300 tons of freight that passes through the terminal daily. Which might be remarked in passing, is some record.

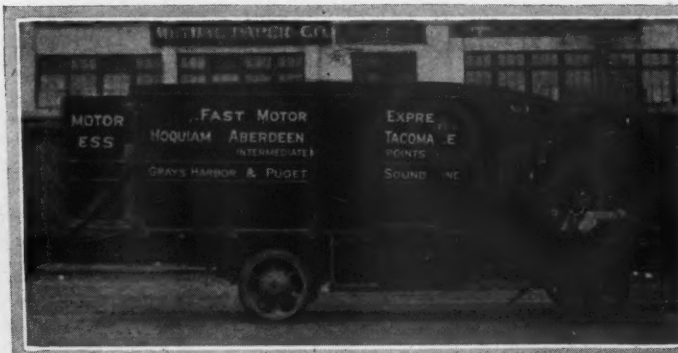
#### The Truck Drivers

While some of the trucks making up this system are driven by their owners, most of them are in the hands of paid drivers, the owners spending their time soliciting business and attending to other details of their business. The drivers are paid from \$6 to \$8 per day. The trucks on the various routes are usually owned in the terminal city farthest from Seattle, so that they are put up nights in the smaller city, where garage rates, etc., are lower. The fact that the truck is owned in the smaller city, and that the driver usually comes from the same town, is a leverage used very successfully in getting business from local merchants.

CORRECTED TO MARCH 15, 1920		
FROM	AUTO FREIGHT DEPOT	TO
SEATTLE		VIA:
MARION AND WESTERN		
AUTO FREIGHT SERVICE COVERING COUNTY AND CITY		
DAILY BY THE FOLLOWING RELIABLE COMPANIES		
ESTABLISHED 1913		
COUNTY		CITY
ABERDEEN, 1 P.M.	BALLARD TRANSFER CO.	BALLARD 9 A. M.
HOQUIAM AND GRAYS HARBOR	BLASIER TRANSFER CO.	2 P. M.
POINT.	CLARK	VIA S. M. DOCK, INTERBAY
AUBURN 1 P.M.	AUTO FREIGHT	FREMONT 8:30, 1:30
CHRISTOPHER AND THOMAS	EDMONDS AUTO	GEORGETOWN 8:30
BELLEVUE 1 P.M.	FREIGHT CO.	
WEDMA	FORBES	
BOTHELL 1 P.M.	AUTO FREIGHT	GREEN LAKE 8:30
POWERSVILLE	GRAYS HARBOR	1:30
ALL WAY POINTS.	PUGET SOUND	
ENUNCLAW 12:30	FREIGHT LINE	
CUMBERLAND, BUCKLEY.	ISSAQUAH	
EVERETT 4 P.M.	AUTO FREIGHT	LESHI PARK 8:30
ALL SNOHOMISH CO. POINTS.	PRESTON	1:30
EDMONDS 2:30 P.M.	AUTO FREIGHT	CONNECT WITH ALL LAKE
PICKERING BEACH.	REDMOND	WASHINGTON BOATS.
ALL WAY POINTS.	TRANSFER CO.	MADISON PARK 8:30
ISSAQUAH 1 P.M.	STRAIN'S	1:30
COALFIELD, PRESTON, MONROE, HAN, HIGH POINT.	AUTO FREIGHT	
KENT 1 P.M.	SNOHOMISH	RAINIER VALLEY
ALL WAY POINTS.	AUTO FREIGHT	8:30-10-1:30-2:30
PUYALLUP 12:30	TOUGAW BROS.	
REDMOND 1 P.M.	RENTON	UNIVERSITY 8:30
KIRKLAND, CAMPTON	RAINIER VALLEY	1 P. M.
AND WAY POINTS	AUTO FREIGHT	
RENTON 9-10 A.M.	INDEPENDENT	
ALBION, PACIFIC CITY.	TRUCK CO.	
1:30-2:30 P.M.	VASHON	WEST SEATTLE
BOYD MAW, TAYLORS MILL	DES MOINES	ALAKI POINT, CONNECTS WITH
SUMNER 12:30	AUTO FREIGHT	LN. BUREN MUNICIPAL LINE
ALBION, PACIFIC CITY.	VALLEY LINE	8:30, 12:30, 2:30 P.M.
SNOHOMISH 8 A.M.		
MONROE.		
TACOMA 5 P.M.		
SPANAWAY, CAMP LEWIS, DUPONT.		
TOLT 12:30		
CARRATON, STILLWATER, NOVELTY		
VASHON 12:30		
DES MOINES.		

PHONE ELLIOTT  
3428

Schedule Card Widely Distributed Among Shippers and Prospective Shippers



Two Views of the Big Truck That Makes the Aberdeen Run of One Hundred and Fourteen Miles

**I**N the bearings sponsored by **SKF** its type of anti-friction bearings have been developed to their highest perfection. And **SKF** further provides an engineering service not only to assure to itself proper application and use of **SKF** products but to help the buyer to fully capitalize the mechanical value built into each device. This service is freely offered and is being continually broadened and advanced by laboratory research that is international in scope. You are assured a similar service behind every product bearing the mark—

# SKF

*Among the **SKF** products now offered are:*

Single row deep groove ball bearings.

Double row self aligning ball bearings.

Steel balls.

Transmission equipment.

**SKF** Industries, Inc.  
165 Broadway, New York City

Supervising at the  
request of the stockholders  
The Hess-Bright Manufacturing Co.  
**SKF** Ball Bearing Co.  
Atlas Ball Co.  
Hubbard Machine Co.  
**SKF** Research Laboratories



**SKF** Research Laboratory established at Philadelphia to co-operate with the big Gothenburg Laboratories in the study of the American Manufacturers' friction problems.



The trucks used in this work are usually of two to three tons capacity, though larger ones are used on the longer routes.

With the exception of the Aberdeen route, all round trips are made in one day. The Aberdeen truck leaves Seattle at 4 P. M. daily, stays over night in Tacoma, and makes the rest of the trip the next day to Aberdeen. A smaller joint terminal is operated at Tacoma on lines similar to the Seattle terminal.

At present the individual owners of the trucks over the various routes solicit their own business, but when the company moves into new quarters next year a regular staff of freight solicitors will be employed by the terminal company, working for all the lines.

The Seattle terminal operates no pick-up system, all merchandise being delivered to the terminal building by the consignee. Incoming freight from other cities is delivered by the truck bringing it in, however, and does not pass through the terminal unless it is going out on another route to destination other than Seattle.



Regular Routes Are Scheduled From Seattle, Lines Stretch Even to Points as Far as Aberdeen

thus making it possible for a truck with a heavy piece of freight aboard, to back up to the elevator for easier unloading.

The concrete floor will extend to the edge of the platforms, through the doors, so that there will be no hump at this point to interfere with truckers of freight.

on this second floor. Fully 90 per cent. of the outgoing freight now handled is case goods manufactured in the East. It is the plan of the company to rent, at a low rate, this second floor to wholesale grocers, etc., who now use the lines, for the storage of carload lots of case goods, from which shipments may be made directly to their out-of-town customers, without the necessity of this merchandise being handled through the warehouse of the shipper. This will save one handling and a considerable sum in freight rates to the consignee.

The foundation of the new terminal is to be strong enough for a four-story building, and the roof of the present two-story structure is to be so built that it may form the floor of the third story without change.

Steel doors will be used throughout, and provision will be made for the eventual handling of removable bodies on some of the truck lines, which will bring about a big saving in handling charges.

The terminal is to be one of the most modern in the country.

#### History of System

The present system and the new terminal are the result of the vision and study of the subject of motor transportation by Mr. Bracklin. Ten years ago he started his first motor truck express, in direct competition to the electric package express maintained by the Puget Sound Electric Co., over its car lines. He was successful from the first, because he gave the best of service at a fair rate, and the electric line finally discontinued its express service. Gradually business improved, and in the past three years it has increased by extraordinary figures. Mr. Bracklin conceived the present terminal system and brought about the organization that has made it a success.

The development of the business in the new terminal will be watched with a great deal of interest by those who are devoted to the expansion of motor freight lines in the larger cities of the country.

Truck No. _____		Received from <b>The Auto Freight Depot</b>		OUTBOUND Way Bill No. <b>693</b>	
Trip No. _____		In good order the following articles are opposite our respective names in accordance with itemized shipping bill furnished herewith			
Driver _____		RUN <b>SNOHOMISH</b> 191			
CONSIGNEE	CONSIGNEE'S DESTINATION	DESCRIPTION OF ARTICLES	QUANTITY	PREPARED	BY WHOLESALE RECEIVED
1.					1
2.					2
3.					3
4.					4
5.					5
6.					6
7.					7
8.					8
9.					9
10.					10
11.					11
12.					12
13.					13
14.					14
15.					15
16.					16
17.					17
18.					18
19.					19
20.					20

Fig. 1. Outbound Way Bill Furnished Truck Drivers

The pickup system was tried and found too expensive, and therefore was done away with.

#### The New Terminal

The success of the terminal operation in Seattle and the limit placed on the business through the present cramped depot has caused the present stockholders to vote the building of a new terminal, and ground has already been secured at First avenue, south, and Dearborn street, on which will be erected a two-story concrete terminal building to cost \$150,000. The new building will have 11,000 sq. ft. of ground floor space. Over \$35,000 was subscribed in one day toward the new building among the express companies in the terminal project and the financing of the new structure is assured. The present terminal charge in the old quarters will be sufficient in the new to pay all rental charges and establish a sinking fund in addition. And with the expansion of business certain to follow increased terminal facilities, a big future is assured.

The new terminal building will have an 8 ft. loading platform on three sides. The front platform, 145 ft. long, will be for receiving goods, and at each end will be a platform 98 ft. long for outgoing freight.

Where the platform passes the freight elevator, it will be hinged to lay back,

The second floor of the terminal will project out to the edge of the platform limit below, this method not only sheltering the platforms in stormy weather, but giving the second floor 2200 additional sq. ft. of floor space.

A unique plan is to be put in operation



One Way in Which a Manufacturer's Transporting Difficulties Are Being "Eased Up" The Interboro Hoist & Body Co., of New York, took advantage of the opportunity which was afforded by so many trucks being driven from the various factories into New York, and shipped many a carload of truck bodies from the Arcadia Trailer Corporation's factory at Newark, New York State, into their warehouse in New York. The illustration shows 4-yard combination dump bodies mounted on a Sanford truck.

# GARFORD

The day has come when the Nation has turned to the motor truck and the highways for a solution of existing transportation problems. Unqualified support and a full utilization of this modern transportation system is urged by America's leading business men and financiers.

# TRUCKS



## Organize to Combat Unjust Legislation

(Continued from page 30)

In another city conditions were similar, although the association that formerly existed had the ear marks of being a live one and held some very successful shows. It appears from the story of an old-time dealer that it was the show that killed it for the members got to scrapping over space.

Up in New York State there was a battery service association in which the writer was elected an honorary member, as he was present at the initial meeting and talked the need of organization. Now I hear that the association is a thing of the past. It bid fair to be successful, but I have subsequently learned that it lacked a strong guiding spirit. And so in a number of instances it was found that the association spirit was dead.

My next call was on an old truck dealer who had been successful in launching a truck dealers' association. In his company and with two other active officers we sat one afternoon and discussed the value of a dealer organization. Among the topics was that of associating with the passenger car dealers' organization or remaining intact.

Two of the dealers were opposed to the plan. They said that the passenger car dealers of that city would not co-operate with the truck dealers and that they were out to get what they could for themselves." Their association has been after

us time and time again to join, but we have turned it down. If we link up with them we are lost; we would not get a smell." And the second dealer was of the same opinion.

The older truck dealer believed that if the right kind of a deal could be made, along the lines suggested by the New York man, that greater results would be obtained. He was in favor of his association organizing similar associations throughout the State, and whenever a drastic bill was introduced that the associations split the expense of hiring counsel and experts to defeat it as well as to educate the public to the advantages of motor highway transportation. Said he: "If we could form a truck dealers' association in every city in the State, and each would co-operate in educating the truck user, and use his influence in politics, we would have those birds at the State House coming to see us, not we them. And we are going to do it if we can."

### A Cleveland Worker Has the Idea

When in Cleveland recently one of the active workers in the truck dealers' association informed the writer that the club proposed to engage the service of a motor highway transportation expert, a good organizer, and have him organize the dealers of the State. A State-wide campaign would then be conducted, and effort was to be made to co-ordinate with the passenger car dealers' and owners' associations in obtaining sane laws and good roads.

From the interviews with and talks with many others the writer concluded that the truck industry may expect an unusual crop of bills antagonistic to the interests of all concerned. It also appears that effort will be made to bar trucks of 5-tons and greater capacity from the highways in several states. Second, the automotive industry organized would be powerful enough to dictate to the legislators what it wants, not what the State Solomons deign to give. Third, that now is the time for the truck dealers to wake up and form organizations and ally with the other branches of the industry. Fourth, every man, woman and child depending upon the automotive industry for their bread and butter should start right now and scan the field of candidates for election and make them declare their stand on the automotive industry, from the manufacturer down to the roadside garage. Fifth, there are hundreds of thousands of votes to be gained by the manufacturer, passenger car and truck dealer, garage man, tire man, equipment dealer, battery man, etc., if they will use their influence with their customers. A hint or word here and there how such and such legislation will effect the customer's pocketbook will accomplish results. Sixth, the trade spends thousands of dollars with the daily press in advertising. Combined action with diplomacy will do much towards enlisting the services of the press. Now is the time to organize, for the November elections are near at hand. Will you do your bit, Mr. Dealer?

## A New Anti-Rust Compound That Withstands Intense Heat

An experiment recently held in New York City proved in a simple manner that Stazon, an invention of the Conversion Products Corp., is not only a preventative of rust, but maintains its great protective qualities even under excessive temperature. The great resistance to heat was the outstanding feature of the demonstration.

The experiment was conducted by H. C. Wilson, of the Conversion Products Corporation, who, in conjunction with W. H. Buell, of the same corporation, has perfected this new effective compound. Wilson and Buell are both veteran metallurgists and recognized leaders in the field of industrial research.

"There are just two outstanding Stazon features," Wilson explained, "It prevents rust and is easily removed. That tells the whole story."

"But it does not begin to tell the vast savings to be effected in its use. A conservative estimate of the annual waste in the United States, due to rust of tools and machinery parts, runs far into the millions. I directed great shipments of ordnance during the war and can speak with personal experience of the great number of rifles alone ruined by rust before they ever reached a soldier."

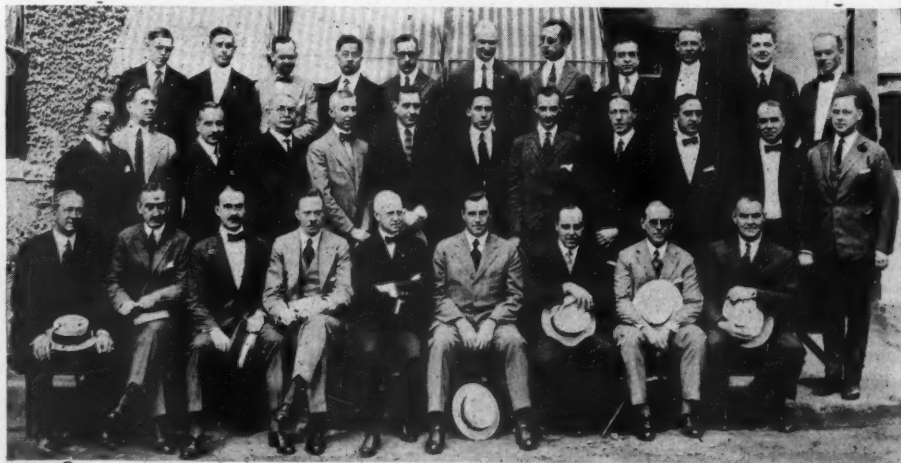
"In all manufacturing plants, where

metal parts are exposed to oxidized fumes, there is an appalling waste, due to rust and corrosion. A plow on the farm that should last twelve years ordinarily lands in the scrap heap at the end of the third year, ruined by rust. Every automobile factory suffers great annual loss from rust damage to spare parts in shipments and in storage.

"In the foregoing cases anti-rust compounds are invariably applied. But when

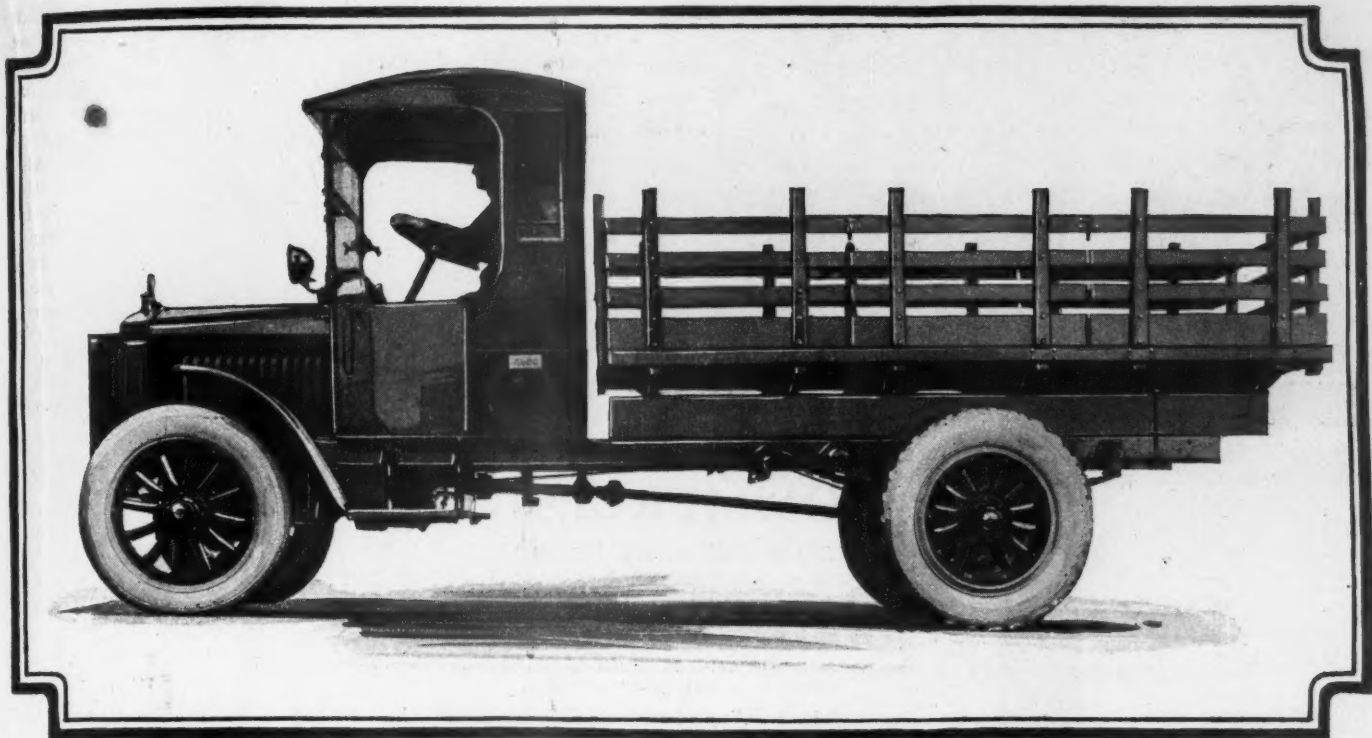
the heat generated in storage or en route gets around one hundred degrees, it melts the rust preventative and the damage begins."

Switzerland road conditions favor the use of 6500 trucks now in that country. Tires are not made in Switzerland, but the market has no lack at present. The people respond well to advertising along American lines.



The Foreign Representatives of the Selden Truck Corporation Meet in First Conference

The conference, which was held in Rochester, N. Y., under the direct supervision of Wilbur F. Reynolds, vice-president, was called to place the men of this organization in closer touch with Selden manufacturing methods, and the men behind the product. The unanimous message of the men, who were representative of every country in which trucks are operated, was that Selden trucks have achieved a wonderful success in their respective countries.



# BALANCE

## *the Secret of Longer Truck Life*

Balance is responsible for the success of the new Jumbo Highway Express. It carries 4,000 pounds at 25 miles an hour with safety to the truck and load—without sacrificing any part of the long, dependable service for which Jumbo Trucks are so well known.

This Jumbo balance is the result of long, painstaking study of every part under difficult operating conditions, changing sizes and materials until each part, no matter how small, is strong enough for any emergency yet without excessive bulk or weight.

In a truck of theoretically perfect balance, all parts should *wear* out at the same instant—no breakage. Here's proof that Jumbo Trucks are as near perfectly balanced as is humanly possible: many Jumbo owners with records of 20,000 to 30,000 miles have not spent a cent for repair parts. The total cost of repair parts for *all* Jumbo Trucks has averaged less than \$10 per year per truck.

Jumbo dealers are successful. Jumbo Trucks satisfy their purchasers. Satisfied customers mean steady, substantial business growth.

*Large increase in production facilities enables us to offer direct factory contracts to a few aggressive dealers. Write today for full information on the complete line of Jumbo Trucks and the sales plan which has helped bring these powerful selling arguments to the attention of truck buyers.*

**NELSON MOTOR TRUCK CO., Saginaw, Mich.**

A Complete Line of Completely Equipped Trucks, 1½ to 4 Tons

**JUMBO**

*The Complete Truck*



# AMERICAN LAFRANCE

## COMMERCIAL TRUCKS

BUILT ON THE SAME PRINCIPLES AS THE WORLD  
FAMOUS AMERICAN-LAFRANCE FIRE APPARATUS

The methods of construction which will be employed in our truck factory will correspond to the painstaking system which has produced the most reliable fire apparatus the world has ever known.

The building of successful fire apparatus is a difficult feat. The motor or power plant must not only be capable of propelling a fire truck weighing up to seven tons but must attain fire speeds equalling the fastest passenger car. When the truck arrives at the fire the same motor must be used for pumping water, frequently for as long a time as fifty hours. We have records of eighty and ninety hours of continuous pumping.

*This is your guarantee of the ruggedness, flexibility and reliability of American-LaFrance Commercial Trucks*

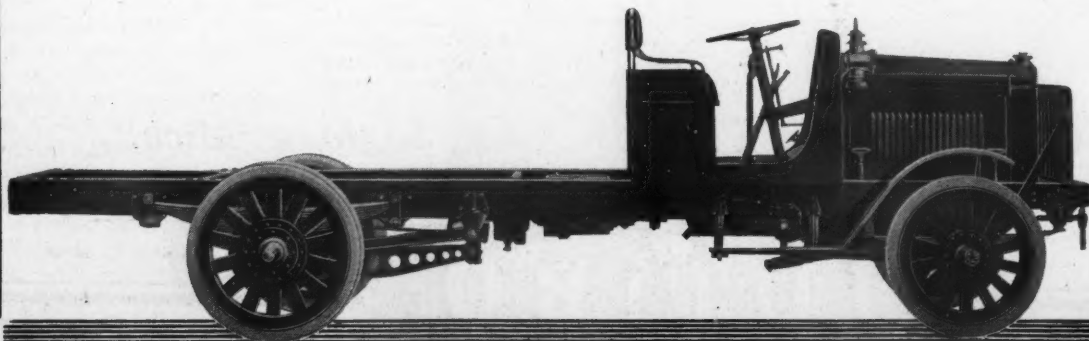
STRENGTH                  POWER                  SERVICE

**AMERICAN-LAFRANCE FIRE ENGINE COMPANY**

OF NEW JERSEY

FACTORY  
BLOOMFIELD, N. J.

NEW YORK OFFICE  
250 WEST 54TH STREET



# POLACK

## TRUCK TIRES

### The Secret of Endurance Correct Compound

The making of a good, durable truck tire depends upon the quality of the material and their correct production.

Polack Tires have proved by their service what is in them. Pure Hevea rubber is used in unusually liberal quantities and it is correctly toughened so that it gives mileage and yet retains its remarkable resilience. For there is no rubber better than Hevea.

For heavy-duty work—and lots of it—put your trust in Polack Tires.

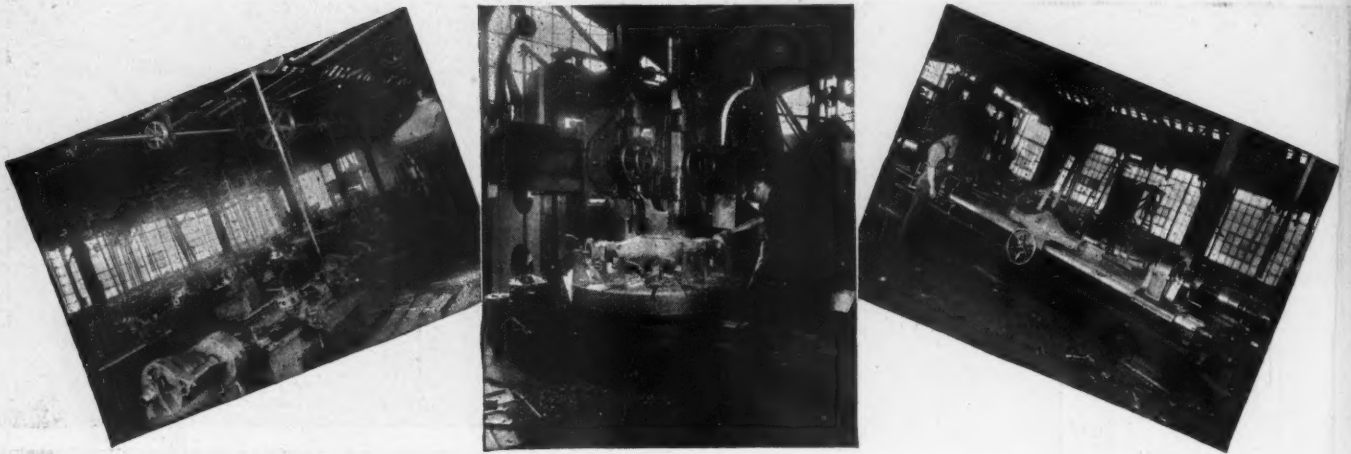
*DEALERS: If you want to represent a good product, write us*

POLACK TYRE & RUBBER CO.  
1876 Broadway  
New York

Subsidiary of the Buckeye Rubber Products Co.  
Cleveland, Ohio

SINCE 1899 WORLD'S STANDARD





## Vulcan Motor Axles Are in Production

Three months ago announcement was made of the Vulcan Motor Axle Corporation.

At that time a factory had been acquired and machinery purchased.

It is a pleasure to announce that this large and modernly equipped factory is today in operation.

It is not surprising that these rapid strides have been made. The personnel of the Corporation is composed of men who have been in constant successful association with one another for many years as principals in one of the biggest

producing axle concerns. These men know the axle business in such a way as to eliminate any lost motion in manufacturing.

Moreover, these men are intensely gratified at the reception already accorded the Vulcan Axle Motor Corporation. The announcement of an axle concern whose primary functions would be to build better axles, form a dependable source of axle supply and carry on business with the utmost of co-operation and courtesy has found an instant appeal among the users of this equipment.

### Vulcan Motor Axle Corporation Detroit, Michigan

#### OFFICERS:

FREDERICK C. GILBERT  
President and Treasurer

SIDNEY C. LOVE  
Vice-President, Sales

R. B. WEAVER  
Vice-President, Production

C. C. MILLER  
Vice-President

JOHN T. HANLON  
Secretary

R. B. BEECHLER  
Chief Engineer



## Heil's Combination Bodies

Make a Truck Four Times More Useful

Hauling lumber or beams on one job, handling cement blocks or brick on another, gravel or sand on the next, coal or light bulk material on still another.

Its use is not confined to any one particular field, but is readily adaptable to every need. Furnished as it is with a double-acting tail gate and two sets of removable sides, it can be converted to a special job with just a few minutes' work.

Its usefulness is further increased by the Hydro Hoist, the improved power hydraulic hoist. The hoist is compact, self-contained, direct acting, highly efficient and thoroughly dependable.

The rugged strength and variety of uses to which *Hydro Combination* outfits can be put attracts the attention and commands the respect of all who investigate.

Let us send you our literature.

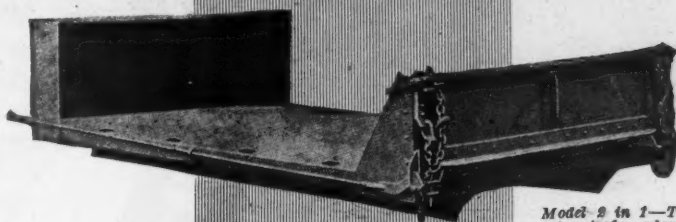
**THE HEIL CO.**

1143 Montana Avenue  
Milwaukee, Wisconsin

St. Paul Chicago Detroit Cleveland  
Memphis Dallas



Model 2 in 1—Tail gate suspended for hauling lengthy materials.



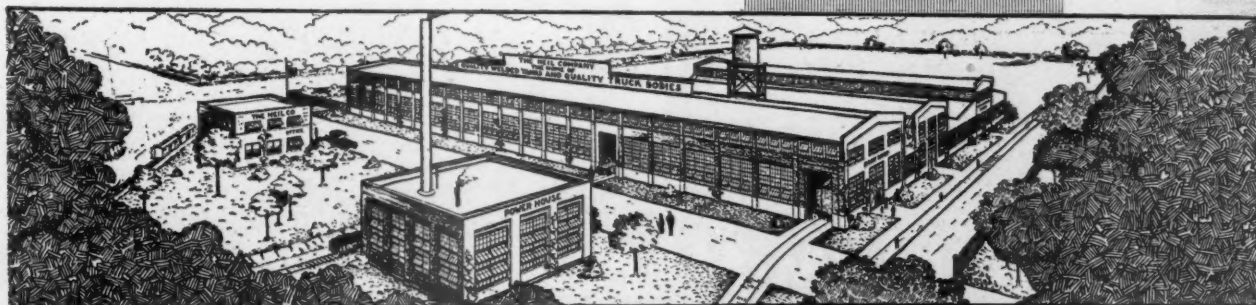
Model 2 in 1—Tail gate raised—adaptes for hauling boxes, cement blocks and the like.



Model 3 in 1—Gravel capacity, sides fitted with coal doors, additional sides may be added.



Model 4 in 1—Coal capacity, fitted with two sets of removable sides, double-acting tail gate and Hydro Hoist.





# GILLIAM TAPER ROLLER BEARINGS

Note the concave end of each roller. It's a reservoir which holds the lubricant and lubricates the *Gilliam Bearing* by capillary attraction.

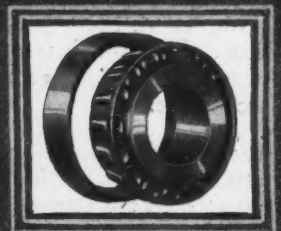
The strong, one-piece stamped cage gives strength and endurance to *Gilliam's*, because there are no minor parts to become loose by wear and friction.

*Gilliam Bearings* have more, longer and larger rollers which gives them maximum carrying capacity and makes them run smoothly and easily.

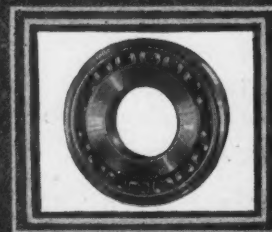
*Gilliam Bearings* are backed by an organization having over fifty years of manufacturing experience.

They last longer because they are stronger.

Detroit Office  
965 Woodward Avenue



Cup and Cone  
Assembly



Maximum  
Number of  
Rollers



Sealed  
Front End

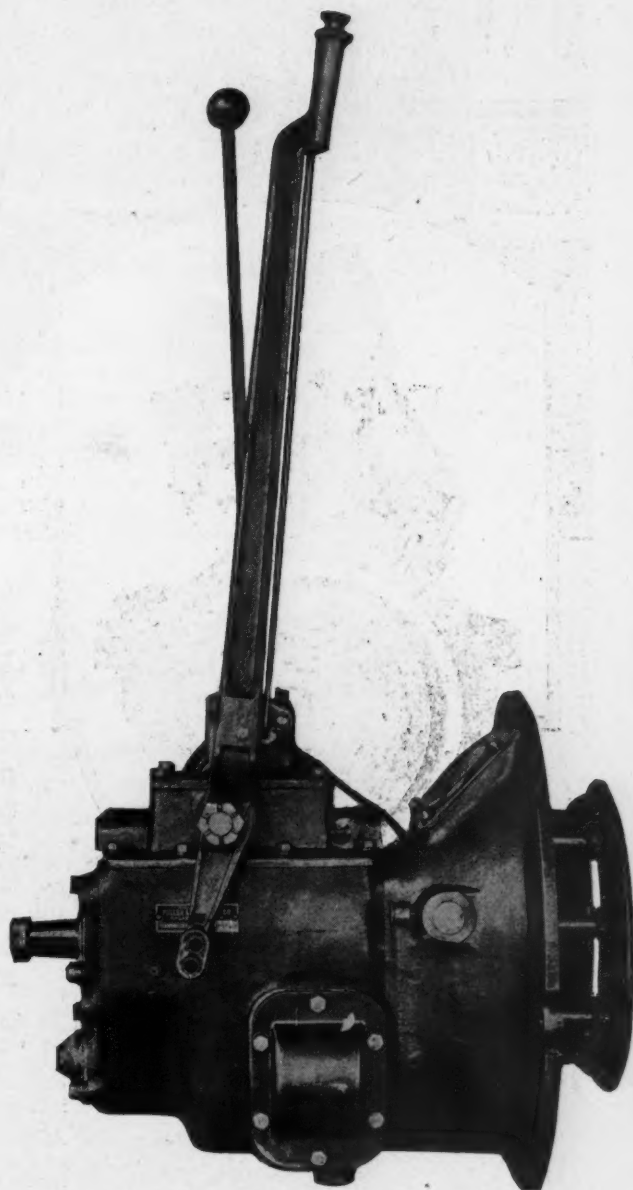
## THE GILLIAM MANUFACTURING CO.

CANTON OHIO

# FULLER

## TRANSMISSIONS

Fuller Transmissions are probably the most conservatively rated transmissions. The Engineering Department have set a maximum recommended capacity on each transmission and will not permit a Fuller Transmission to be used with a motor too large for its rated capacity. Add to that the careful workmanship and good materials used, the truck buyer is insured maximum service wherever a Fuller Transmission is used.



**FULLER & SONS MFG. COMPANY**

KALAMAZOO, MICHIGAN

DETROIT

NEW YORK

SAN FRANCISCO





## Efficient, Economical and Flexible At ALL Speeds

The Midwest Truck or Tractor Engine delivers a degree of performance never before thought possible. It is a constant, dependable, fully developed type of service.

This is not an engine that is efficient, economical and flexible only at certain engine speeds. The Midwest engine is efficient, economical and flexible at ALL operating speeds.

To the truck manufacturer, this means an engine that *will* operate at *high* engine speeds—not an engine that becomes troublesome and faulty the faster it is operated.

And to the tractor manufacturer it means an engine that will go into the field—far off the beaten track of garages and repair shops—and work *satisfactorily* hour after hour at *low* engine speeds.

Manufacturers are realizing that the sum total of their present engine needs is completely satisfied in the Midwest truck and tractor engine.

Our open capacity is being rapidly absorbed. When may our engineers consult with you?

Please address Sales Division 13

**MIDWEST ENGINE COMPANY**  
INDIANAPOLIS, U. S. A.

# MIDWEST

**TRUCK and TRACTOR ENGINE**

*Standard*  
DETROIT  
USA

# STRENGTH

Strength is not only characteristic of the *Standard* motor truck but also of the factory behind it. The men behind the *Standard Motor Truck Company* have been building commercial vehicles for more than thirty years, horse drawn trucks for twenty years and heavy duty motor trucks for ten. During this time their reputation for strength and fair dealing has grown until it is unsurpassed by any manufacturer in the motor truck field today.

Consider the number of times dealers in your own city have changed motor truck lines. Why?

To the dealer who realizes the advisability of connecting with a long established successful motor truck manufacturer with a product that reflects the latest designs and handiwork of the best engineering skill available and with a foundation akin to the Pyramids of the East, the *Standard* line offers unlimited possibilities. Write today for information regarding territory available.

STANDARD MOTOR TRUCK COMPANY, DETROIT, MICH.

*Standard* **MOTOR TRUCKS**  
Registered **MADE IN DETROIT USA**

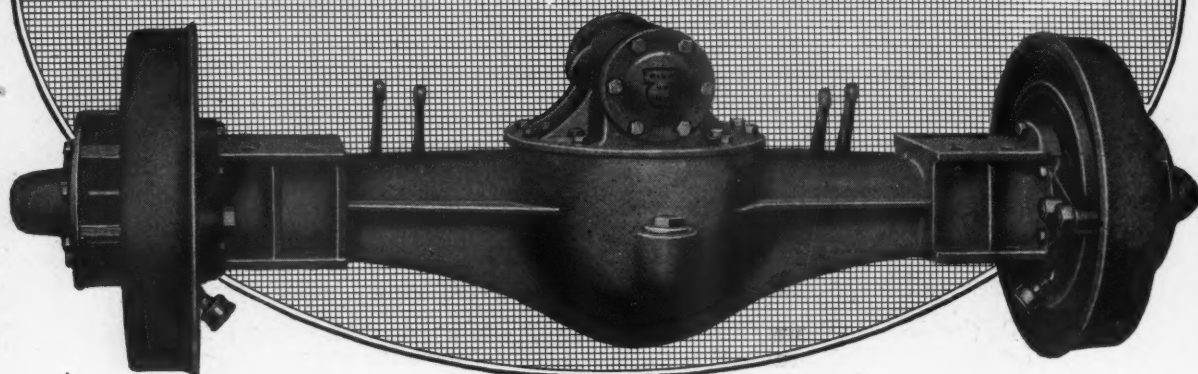


Awarded Gold Medal in the International Trials—June 21 to 26, 1920, Barcelona—Madrid, Spain

"All the name implies"



# WISCONSIN AXLES



## Keeping Faith With Our Customers

For nearly a year the demand for Wisconsin Axles so far exceeded our production facilities that we were unable to accept new accounts without grave injustice to our old customers.

Now, with the completion of the new addition to our plant, our capacity is increased to a point where we can make prompt deliveries on new business.

Our present line includes 1, 1½, 2, 2½, 3½ and 5 ton capacities—the most complete line of worm-drive rear axles made in this country. Each model has separate bearing lay-outs, shaft sizes, housings and differentials. There is no

duplication and customers are not permitted to over-rate these capacities.

Manufacturers of cheap trucks cannot afford to use our product. Manufacturers of high-grade trucks cannot afford to place orders without careful consideration of the Wisconsin line.

The time is soon coming when trucks will have to be sold; not apportioned out to waiting buyers.

When that time does come Wisconsin quality and service will place the manufacturers of Wisconsin-equipped trucks in a strong position.

We have kept faith with our customers and shall continue to do so.

WISCONSIN PARTS COMPANY, Oshkosh, Wisconsin



# BESSEMER



## The True Test of Value

The true test of any truck's value is gauged by years of hard, untiring, every-day service on the road. *Only* this kind of performance will bring repeat orders from satisfied users—and repeat orders are proof positive of a truck's ability to *stand up*. No dissatisfied truck owner ever rebuys the same make of vehicle.

It is a fact that many of the orders lately received for Bessemer Trucks are from owners who are running Bessemer Trucks bought eight or nine years ago. And these trucks are performing hard tasks day after day with a minimum of repairs and depreciation.

Maintaining the confidence of Bessemer owners is a religion with us. When Bessemer dealers want service from the factory to accommodate their customers, *they get it*—without delay or controversy. That's another reason for the consistent growth of Bessemer dealers.

If you are seeking a truck dealership that holds out the advantage of building a substantial business backed by 100 per cent factory assistance, write us.

**BESSEMER MOTOR TRUCK COMPANY**  
Grove City, Pa.

# MOTOR TRUCKS





***Do you remember how you took hold of hands when you played crack-the-whip in your school days?***

That clinch hold is the principle of our lock-seam products.

It is the reason they resist internal pressures over one hundred pounds.

We have developed our patented automatic machines to such high efficiency that we can produce light gauges of lock-seam tubes at a saving of 25% to 60% of the cost of seamless or brazed tubes. An economy is effected wherever this lock-seam tube replaces brazed, welded or seamless tubes for radiators, exhausts, ignition conduits, oil tubes or wherever light gauge tubing can be used.

Our rolling mills can fill any thin metal requirements in core or shim stock, brass or copper.

Special sizes and shapes of tubing made promptly. Write for booklets describing our lock seam and thin metal products.

**DALLAS BRASS & COPPER CO.**

223 N. Jefferson St., Chicago, U. S. A.

# MEAD-MORRISON SERVICE

## LIFTS THE LOAD OF INDUSTRY

Mead-Morrison material-handling equipment, backed up by Mead-Morrison service, is doing valuable work and saving time and money in varied lines of the nation's industry.

Mead-Morrison Engineers have, in each unit of the Mead-Morrison line, built a material-handling machine whose power, dependability, economy and length of life has been proven by performance.

No problem is too intricate for this efficient combination of utility and service. Mead-Morrison Engineers see to it that the purchaser not only gets the proper equipment, but that each piece is utilized to assure maximum usefulness.

## MEAD-MORRISON Truck Winch

Shown here is a practical illustration of the Vertical Capstan Winch in operation. One man with the aid of the Winch is enabled to move this heavy piece of machinery, weighing sixteen thousand pounds. Without the Mead-Morrison Winch its handling, with any number of men, would be a difficult problem.

### TRUCK WINCH DISTRIBUTORS:

AUTO TRUCK EQUIPMENT CO.  
Pittsburgh, Pa.

HUMMEL MFG. CO.  
St. Louis, Mo.

MANSFIELD STEEL CORP.  
Detroit, Mich.

SPRINGFIELD COMMERCIAL  
BODY CO.  
Springfield, Mass.

EDWARD R. BACON  
San Francisco, Cal.

INTERBORO HOIST & BODY CO.  
Brooklyn, N. Y.

MOTOR TRUCK EQUIPMENT  
CO.  
Philadelphia, Pa.

THE TRUCK ENGINEERING  
CO.  
Cleveland, Ohio

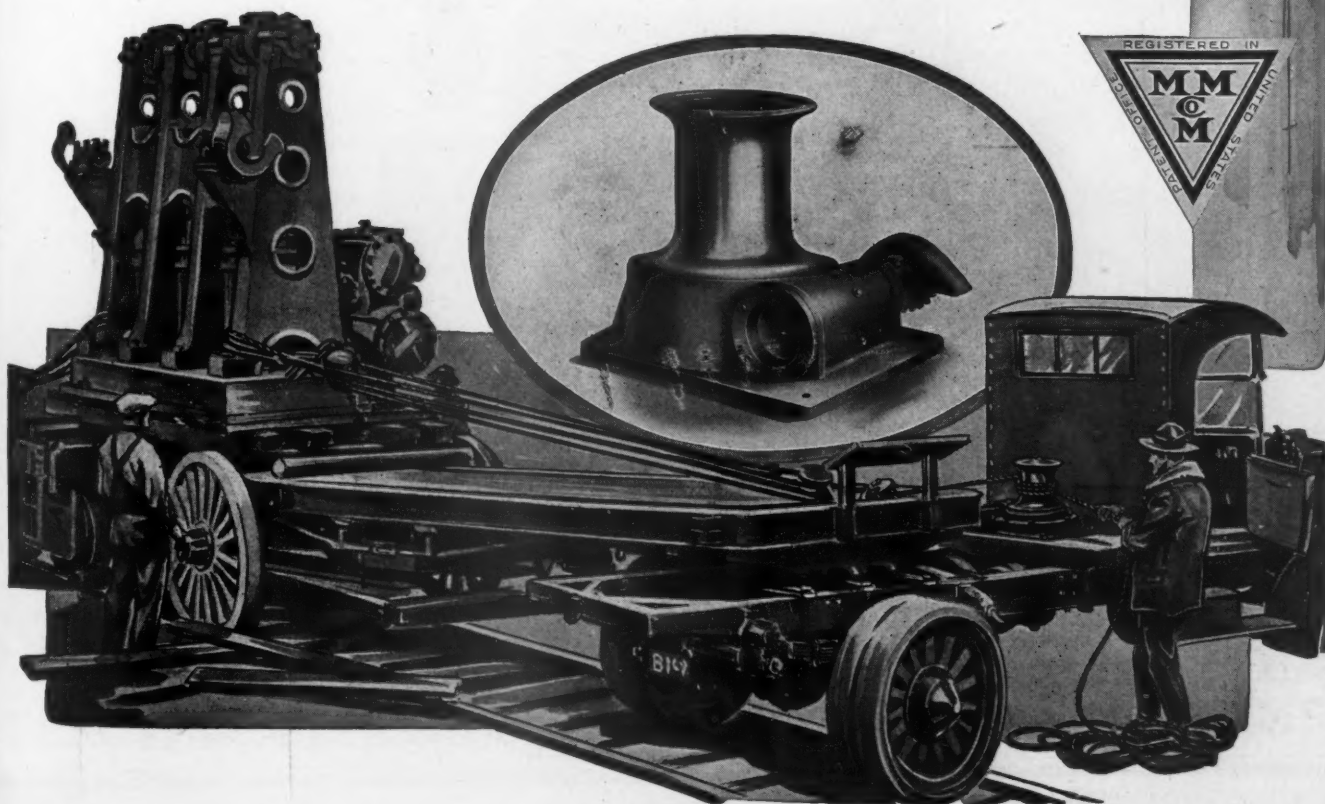
HORIZONTAL HOIST CO.  
Chicago, Ill.

KUNKEL WAGON CO.  
Baltimore, Md.

WILLIAM OGDEN  
Indianapolis, Ind.

### MEAD-MORRISON MANUFACTURING COMPANY

922 Prescott St., East Boston, Mass.





# KEARNS

## SPECIFICATIONS

### 1½ Ton Chassis

**RADIATOR**—KEARNS special design, core suspended in cast-iron shell.

**MOTOR**—Herschell-Spillman, bore 3½" x 5" stroke, 4 cylinder, water cooled.

**CARBURETOR**—Zenith.

**MAGNETO**—Berling, high-tension.

**GOVERNOR**—Pierce.

**TRANSMISSION**—Grant-Lees, 3 forward and 1 reverse speeds.

**AXLES**—Torbensen internal gear with Powerlock differential. Timken bearings throughout.

**SPRINGS**—Chrome vanadium steel.

**TIRES**—34" x 3½" front, 34" x 6" solid rubber rear. Pneumatics optional.

**FRAME**—Special heat-treated pressed steel.

### Also a ¾ Ton Chassis

The name KEARNS has been affiliated with transportation problems in the United States and Europe since 1872.

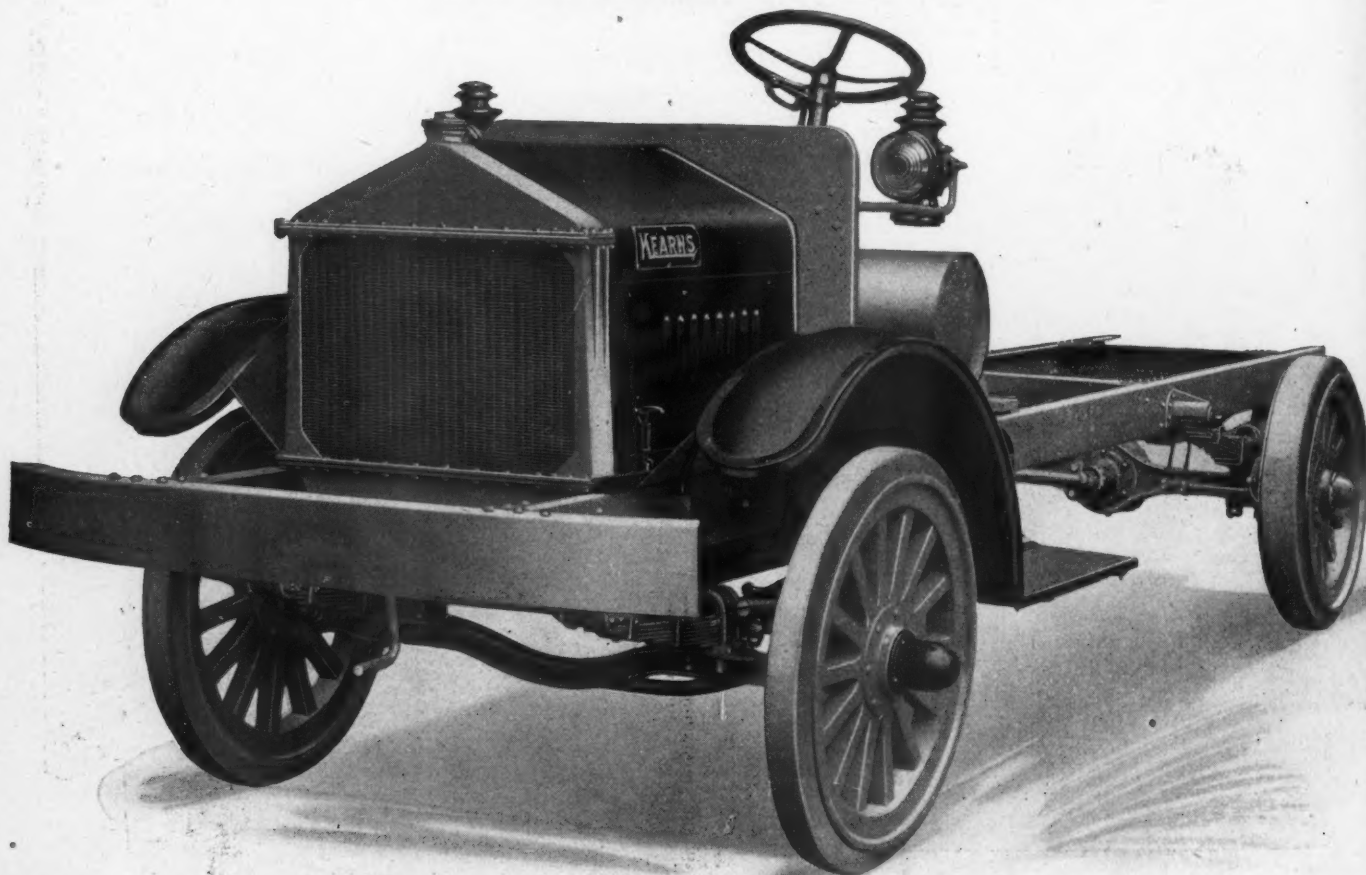
Fourteen years of conscientious effort spent in the development of power-driven vehicles are yielding their reward in the excellent reputation the KEARNS truck has built for itself.

Standard parts of undoubted excellence are used throughout, and back of the truck stands an organization with ample capital and factory facilities to insure co-operation with the Dealer and Service to the owners of KEARNS trucks.

Additional factory facilities enable us to accept a few more contracts from Dealers who are interested in representing a truck with the sales advantages of moderate price and Honest-to-Goodness SERVICE.

*Write Today for Our Sales Plan—It Will Interest You!*

**The Kearns-Dughie Motors Corporation**  
**DANVILLE, Pennsylvania**





## Gasoline and Electric Trucks for every hauling requirement

We are the only manufacturers of both gasoline and electric trucks for all hauling requirements.

Oneida is able to recommend impartially which type of truck is best suited to your needs, the *right* truck for the job.

Designed and built to stand the terrific strains of hauling heavy loads over rough roads at high rates of speed, the Oneida gasoline trucks combine the speed of motor cars and the bulldog tenacity to carry weighty freight to its destination.

Five husky models of gasoline trucks provide ideal equipment for long distance hauling. These trucks are daily establishing records for extraordinary performance. Some

of the Oneida long run records have stood untouched since they were made. Our record run, under capacity load, made from our factory at Green Bay, Wisconsin, to New York City, 1,451 miles in 62 hours, is nearly two days faster than any other similar record.

Our electric models, equipped with the unique Oneida two-gear drive, are unequalled for economy and reliability in city hauling and delivery work.

Literature, sent on request, will tell you more about the "engineering reasons" why Oneidas do a hard day's work *better*. And why the complete Oneida line offers unusual advantages to the dealer.

**DEALERS**—Reliable, thoroughly established dealers will find it to their interest to write us regarding the possibility of their handling Oneida Motor Trucks

ONEIDA MOTOR TRUCK COMPANY

1208 Broadway

GREEN BAY, WIS.

# ONEIDA

ELECTRIC TRUCKS

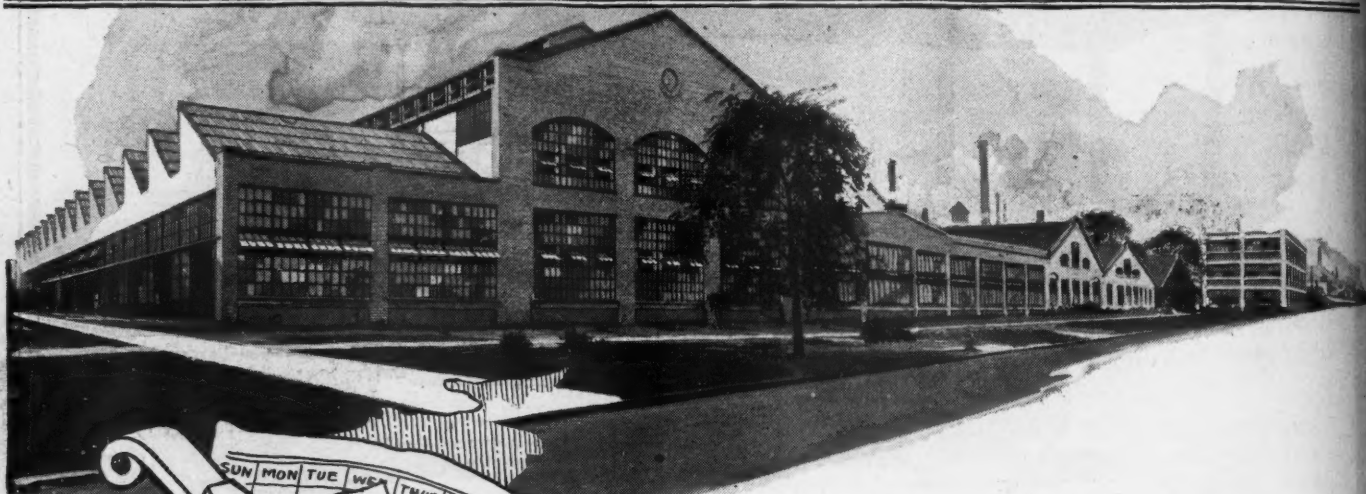
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GASOLINE TRUCKS



# Factors of Safety

*In Spring Making* *In Spring Buying*



## A World's Record in Production—And What It Means to You

More than 2,000 tons of Detroit Springs for trucks and pleasure cars are made each month in this plant.

This, to the best of our belief, is the world's record production of motor car springs.

When the buildings now under erection are completed, more than 3,000 tons a month can be produced.

This tremendous tonnage is the result of 16 years of successfully meeting the requirements of American truck and pleasure car builders.

*It reflects their confidence in*

- our facilities and equipment for manufacture.
- our ability to ship material promptly.
- our knowledge of how to make high grade springs.
- our business and sales policies which have led to friendly relationships over a long period of years.
- our financial strength which gives us the power to buy material in large quantities, with consequent saving.

These are Factors of Safety to *you* as well, in buying the springs for your truck or car.

**DETROIT STEEL PRODUCTS CO.**  
2250 East Grand Boulevard      *Detroit, U. S. A.*



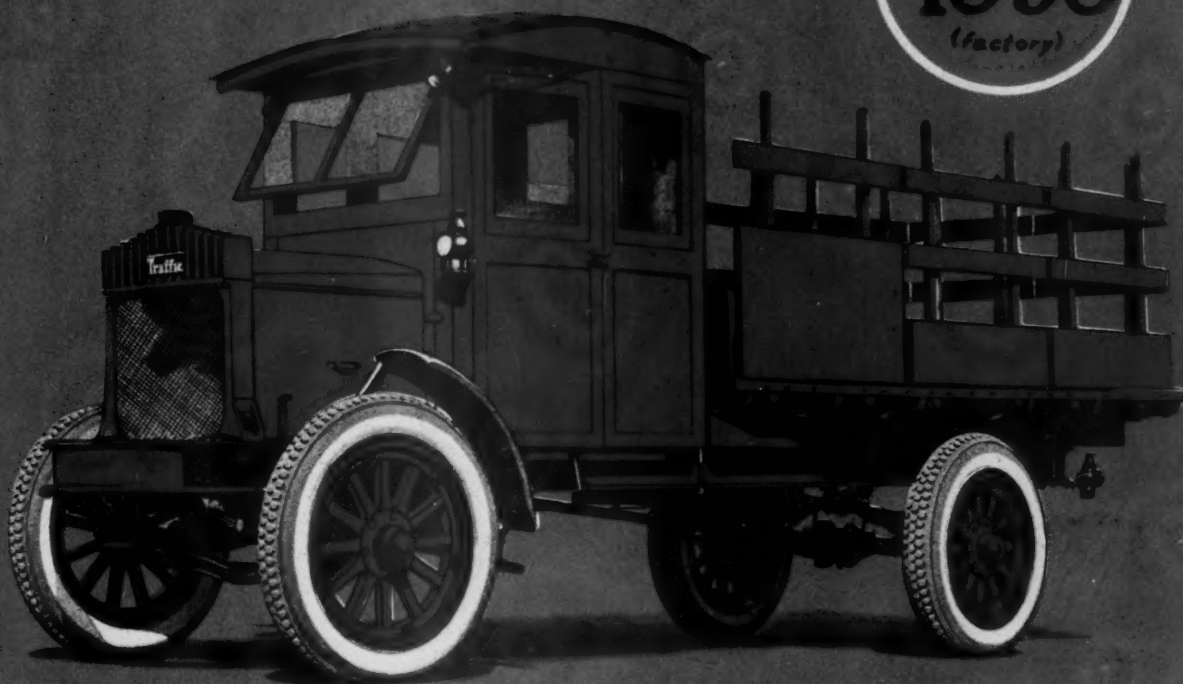




# Traffic Truck

4,000 LBS. CAPACITY

(chassis)  
**\$1595**  
(factory)



## The Answer to the Dealers' Problem and the Users' Needs

Bankers and big business men in practically every progressive community have recognized the motor truck as a necessary utility. They favor and recommend them because they are a transportation necessity for economic hauling for the farmer, retailer and manufacturer.

Remember, the truck business is in its infancy and is going forward by leaps and bounds. It offers a sound foundation for a permanent business and greater possibilities for profit than any other piece of automotive machinery—because it is essential and is today's fastest growing industry.

The Traffic is *the lowest priced 4,000-lb. capacity truck in the world.* Its success is without an equal in the production of a passenger car or truck.

—next page, please



# Traffic Truck

4,000 LBS. CAPACITY

The remarkable success of Traffic dealers throughout the United States and fourteen foreign countries has proved Traffic's superiority in the field.

The many thousands that have been sold have proved Traffic's superiority by performance in the owners' hands.

Dealers who have analyzed the automotive situation are turning to trucks—those who have fully realized the soundness of Traffic's organization and Traffic's policies have taken the "bull by the horns" and found the answer to their present problem and future success in the soundness of Traffic Trucks.

Specialization, standardization and quantity production in the largest

factory in the world devoted exclusively to building 4,000-lb. capacity trucks of one model only, have made the remarkably low price possible for the Traffic.

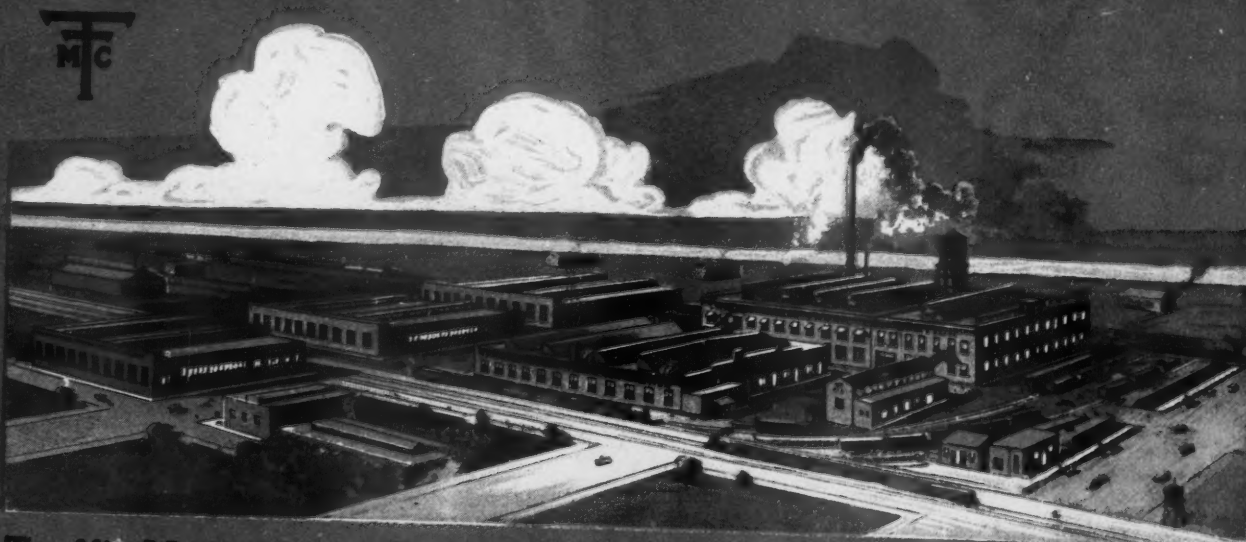
The factory is building a Traffic Truck every 10 minutes.

Extending our already extensive dealer organization offers an opening for direct factory connections for a few additional dealers who want to grow and make money.

You must act quickly if you want the Traffic contract. Don't write a letter. Wire us at our expense and, if your territory is open, we will give you the opportunity you are looking for. Tomorrow may be too late—wire today.

## Specifications:

*Red Seal Continental 3 3/4 x 5 motor; Covert transmission; multiple disc clutch; Bosch magneto; Carter carburetor; 4-piece cast shell, cellular type radiator; drop forged front axle with Timken roller bearings; Russel rear axle, internal gear, roller bearings; semi-elliptic front and rear springs; 6-in. U-channel frame; Standard Fisk tires, 34x3 1/2 front, 34x5 rear; 133-inch wheelbase; 122-inch length of frame behind driver's seat; oil cup lubricating system; chassis painted, striped and varnished; driver's lazy-back seat and cushion regular equipment. Pneumatic cord tire equipment at extra cost.*



**Traffic Motor Truck Corporation**

*Largest exclusive builders of 4,000-lb. capacity trucks in the world.*

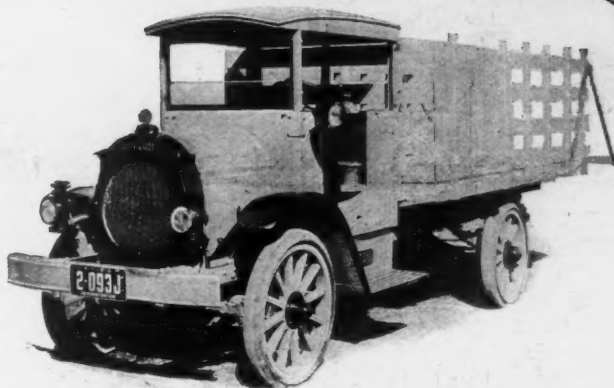
**St. Louis, U. S. A.**







# FULTON



## Garvin Denby and the FULTON

The needs of an INDUSTRY and the aims of a MAN do not always work in perfect harmony.

But sometimes the needs meet the aims in a manner which leaves nothing to be desired on the part of either the INDUSTRY or the MAN.

Such a happy union is exemplified in the announcement that Mr. Garvin Denby, former President of the Denby Truck Company, has assumed the position of President and General Manager of the Fulton Motors Corporation.

To those who know Mr. Denby's pioneer position in the motor truck industry; of the herculean tasks accomplished by him in the standardizing of motor truck construction; of his untiring zeal in promoting the success of the entire industry; of his unquestioned integrity and ability, this announcement of his accession to the new position of active head of the Fulton organization will occasion no surprise.

To those who have had no previous acquaintance with him it may be said that under Mr. Denby's experienced guidance the Fulton Motors Corporation

has opened to it an era of increased prosperity which will exceed the most optimistic expectations of the founders.

Fulton policy, as established by Mr. Denby, means a continuance, with minor improvements, of the famous 2 ton Fulton Model C, whose efficient and economical performance earned for it the name of "The Repeat Order Truck" among all Fulton users.

In addition, Mr. Denby will shortly place on the market a new Model A Fulton  $\frac{3}{4}$  to 1 ton type, which will possess all of the tried and tested features of the 2 ton Model C, including the justly famous triple-heated gas (Herschell-Spillman) motor, whose 14-miles-to-the-gallon has been not the least of Fulton's economy record.

*Special local advertising co-operation will be extended to all live dealers who are allotted territory under the new Fulton plan of distribution. Write for particulars*

**FULTON MOTORS CORPORATION**  
Farmingdale, Long Island, N. Y.



# Visible Dispensing Aids and Develops Salesmanship



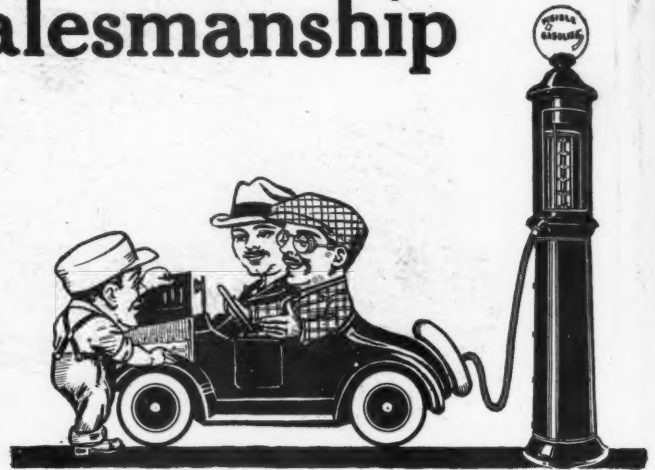
SCENE: At the Blind Pump

*Customer:* "What's your price on cylinder oil?"

*Man at Crank:* (Too busy to hear above the racket.) "I tell you it *does* give correct measure, it was inspected only last week."

*Customer:* "I didn't question your pump; I only asked the price of oil—but, never mind, we'll get it at the next stop."

There's a lot of difference between sweating at a crank and standing smilingly at the lever or push button of a motor-driven pump.



SCENE: At the "Victory Visible"

*Salesman:* (Looking over car while customer's tank is filling.) "Your oil tank's pretty low; hadn't I better put in a gallon?"

*Customer:* "Why, yes; better fill her up. Say; that see-what-you-get-pump is as good a thing for you as it is for us, isn't it? Gives you time to make other sales."

Self-respect, to begin with; and that's the beginning of successful salesmanship.

And the *time* factor! Pumping the 5 gallon clear glass reservoir of a

## "Victory Visible"

takes *seven seconds*. The rest of the time—while the customer's tank is filling—can be devoted to the sale of lubricants, or a quick once-over of the car to see whether it needs new tires, spark plugs or other things.

And the customer is put into a receptive mood toward you because he knows that *the pump is giving him a square deal*—and that, therefore, he is dealing with a square man.

## Trade Follows the "Victory Visible"

Gasoline trade, to begin with, and other, and still more profitable, trade as a consequence.

Our customers, all over the country, write us that their gasoline trade doubled, tripled—increased 500%—as a consequence of the *good will and confidence* that *Visible Dispensing* created among the motorists of their whole community.

Send for Our Book—"Stopping Up Leaks and Losses in the Sale of Gasoline." It will open your eyes.



TRUCK OWNERS  
Send for This Book

**TOKHEIM OIL TANK & PUMP CO.**  
Fort Wayne Indiana



DEALERS  
Send for This Book



## Sell Highland Cabs *and* Bodies with Detroit-Made Trucks!

### *The Highland Line*

"EVERYDAY" CLOSED CABS

HIGHLAND OPEN CABS

"EVERYWAY" FARM BODIES

HIGHLAND STAKE BODIES

HIGHLAND EXPRESS BODIES



WITH every truck chassis shipped from a Detroit factory you can sell Highland Cabs and Bodies. They can be ordered from Highland's Detroit branch and shipped in the same car.

You get the low full-carload freight rates and the prompter full carload delivery. But you don't need to order the bodies by the carload and tie up your own money in them.

Your customer gets his body promptly for no more than he would pay a local body builder, and you make a good profit on the body.

Highland Cabs and Bodies are being stocked by branches and dealers in many leading distributing centers of the industry. Dealers ordering trucks from distributors in those localities can also order bodies at the same time.

Highland Cabs and Bodies for motor trucks have for many years enjoyed the best standing with the trade. The designs have been proved to be right and the material and workmanship is the best.

We have always in stock at Detroit closed "Everyday" Cabs, especially adapted to trucks used on long trips, open cabs for city work, stake bodies, express bodies and "Everyway" Farm Bodies which can be made up in a large number of combinations for all kinds of farm hauling.

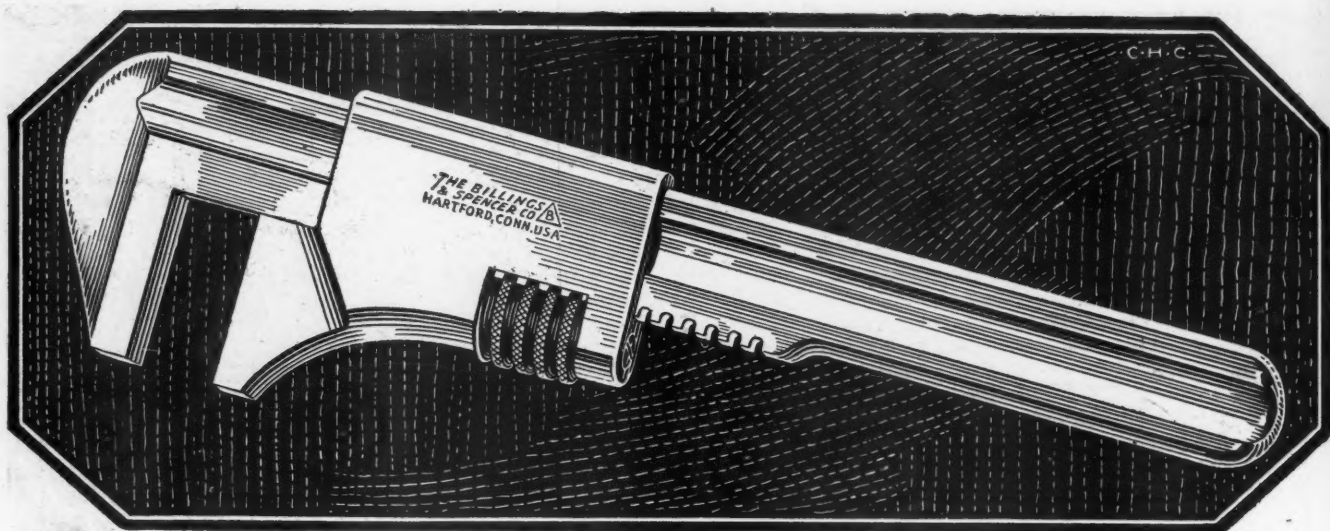
*Write now for literature and our dealer's proposition.*

THE HIGHLAND BODY MFG. COMPANY  
Elmwood Place, DETROIT, MICH. CINCINNATI, OHIO

# HIGHLAND

STANDARD  
CABS *and*  
BODIES





**O**NLY Billings & Spencer drop forge this wrench throughout. The difficulty of drop forging a jaw makes others take to easier and cheaper casting. That's the short fact behind the long service.



**THE BILLINGS & SPENCER CO.**  
HARTFORD, CONN.

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# KISSEL

## Engineering Achievements

*designed, constructed and built at the Kissel factories  
for specific truck power and performance requirements*

## Surmount Transportation Obstacles

For instance — in the Imperial Valley, 119 ft. below sea level, with thermometer 130° to 135° in the sun, and roads of sandy silt, 15 Kissels, equipped with the Kissel-built motor, cooling system and other exclusive Kissel features, are working 15 to 18 hours a day.

Such dependability is due to concentrated engineering and construction efforts along specific lines, plus Kissel factory facilities, organization and 14 years' truck-building experience.

Kissel distributor transportation-engineers located in all principal cities.

**Kissel Motor Car Co., Hartford, Wis., U. S. A.**

*Originators of the ALL-YEAR Truck Cab.*



*"Loading the famous Imperial Valley cantaloupes 119 ft. below sea level with temperature 112° in the shade, 130 to 135° in the sun. During the cantaloupe season these trucks work 16 hours a day. No paved streets, but roads of silt deposits from the Colorado river."*



# VEE FLEX

## A Superior, Flexible "V" Shaped Fan Belt

HLB VEE FLEX is a durable, flexible leather fan belt, widely used by motor truck makers, and famous for its superior service and lasting qualities.

Study carefully its construction. Note how each lamination both overlaps and underlaps the other and is securely riveted. This gives great strength and pliability, and insures minimum stretch.

Made of high grade oak-tanned leather, specially treated to render it proof against heat, water and oil. Practically noiseless in operation. Possesses a pulley-grip that delivers full power to the fan. Stands up under long, hard service.

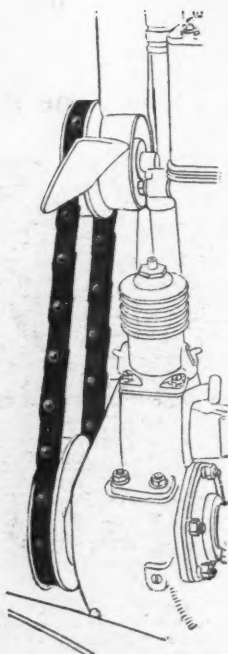
We make VEE FLEX Fan Belts in widths and lengths to your specifications. Also supplied in rolls of various sizes to truck manufacturers desiring to make up their own endless belts.

Send us your blueprints and have us submit a sample VEE FLEX Belt for testing.

### HIDE, LEATHER & BELTING CO.

Indianapolis

Ind., U. S. A.



# TRADE MARK



**T**HE Bosch Magneto trade-mark on a magneto or a magneto part carries this definite message: "I signify the genuine—I am the guardian of quality. The product upon which I am stamped is worthy of the name 'America's Supreme Ignition System.' I assure the manufacturer, the trade and the public of supreme service and absolute satisfaction."

More than 4,322,600 readers of forty-four publications are being told the story behind the Bosch trade-mark every month. This Bosch Symbol of merit has an ever increasing cash value to the manufacturer, the trade and the entire automotive world.

**Be Satisfied**

**Specify Bosch**

300 Service Stations in 300 Centers

**AMERICAN BOSCH MAGNETO CORPORATION**

Main Office and Works: Springfield, Mass.

Branches: New York, Chicago, Detroit, San Francisco

# BOSCH



This is the Big Bosch Trade-Mark page which reached more than two million readers in the September 11th issue of the "Saturday Evening Post."





IN permanent, raised characters, on the side of every Covert Transmission case, is the Covert brand—silent warrant to you that, in this vital part, the builder of your vehicle has chosen the highest quality equipment.

Covert Transmissions do not go nameless to the vehicle market place. We are proud to stand behind them, for we well know their staunchness and merit.

Covert merits are common knowledge in the automotive industry where, for twelve years, Covert Transmissions have been building Covert prestige.

We cite these facts here for your benefit. Use them as guidance in your next purchase of an automotive vehicle.

## COVERT GEAR COMPANY, INC.

*Sales, Engineering and Factory: Lockport, N. Y.*

*Export Offices: 100 Broad Street, New York City*



# Giant Grip

## Traction Equipment for Motor Trucks

### *Traction in Two Minutes No Tools—No Jacking Up the Wheels*

**T**HE truck equipped with Giant Grips never wastes time at mud-holes or stretches of bad roads. In two minutes' time the driver hooks his chains to the permanent clamps on the wheels and the truck pulls through.

Garage owners, supply and repair stations, hardware and accessory dealers everywhere are getting big sales on Giant Grip Traction Equipment for Motor Trucks. Widespread advertising and the praise of satisfied owners is bringing them profitable business.

### **Giant Grip Mfg. Co.**

Formerly Named Challoner Co.  
Dept. 10      Established 1863      Oshkosh, Wis.

The Giant Grip line includes a size for every type of wheel and tire. One style fits over 400 makes. This means small investment in stock and a quick turnover.

Clamps are permanently attached to wheels and outlast the truck. Chains kept in tool box when not in use, easily attached or detached as needed.

Write to us without delay for complete information about our proposition to live dealers.

*New York Distributors:*

**Shultis  
Automotive  
Corporation**  
16-22 W. 61st St.  
New York City





# More Trucks—More Pages

and the importance of variety in the advertising

## News of Motor Trucks

¶ Variety in advertising as well as variety in editorial content is the spice in the life of a magazine having a universal appeal.

¶ Due to its performance and prominence in many different lines of publicity The Digest publishes the announcements of an unusual diversity of products. Hence, there appears in The Digest also the greatest variety of advertising in practically every classification.

¶ This is especially true of motor trucks. Since the beginning of truck advertising, business men have been reading a greater variety of motor truck advertising news in The Digest than in any other general publication.

¶ Figures for motor truck advertising in the first six months of this year are given on the page opposite. They show the number of manufacturers and the number of pages used by each in seven leading publications.

¶ It is the buying power of The Digest's hundreds of thousands of manufacturers, wholesale and retail business men, officials in industrial and public utility corporations, contractors, builders, etc., that has held The Digest in its premier position in motor truck advertising and the records for the past six months show an even larger leadership than usual.

IMMEDIATE National Publicity

# The Literary Digest

# Advertising of Motor Trucks and Trailers

Showing the number of pages and manufacturers in seven leading magazines

## During the First Six Months of 1920

	Literary Digest	Sat. Eve. Post	Collier's	Scientific American	Leslie's	System	American
	Pages	Pages	Pages	Pages	Pages	Pages	Pages
Acme Motor Truck Co.....	4	..	2½	..	..	3	2
Atterbury Motor Car Co.....	1	..	..	..	..	..	..
Autocar Co.....	6	6	5	..	..	1	..
Bethlehem Motors Corp.....	1	7	2	..	..	..	..
Clydesdale Motor Truck Co.....	7	..	..	..	1⅞	..	4
Dearborn Truck Co.....	1	..	..	..	..	..	..
Diamond T Motor Car Co.....	6	..	..	..	..	..	..
Dodge Bros.....	6	..	1	..	..	..	3
Duplex Truck Co.....	..	6	..	..	..	..	..
Federal Motor Truck Co.....	4	..	1	6	4	3	4
Four Wheel Drive Co.....	3	7	..	..	..	..	..
Garford Motor Truck Co.....	..	6	..	..	..	..	..
General Motors Truck Co.....	6	..	..	6	6	6	6
Gramm-Bernstein Motor Truck Co.....	6¾	..	..	..	..	..	..
Highway Trailer.....	..	2	..	..	..	..	..
International Motor Co.....	6	..	..	14	..	..	..
Jackson Motors Corp.....	1	..	1	..	..	..	..
Kelly-Springfield Motor Truck Co.....	3	7	..	..	..	..	..
Kissel Motor Car Co.....	..	3	1	..	..	..	..
Martin Rocking Fifth Wheel Co.....	..	..	..	..	..	½	..
Maxwell Motor Co., Inc.....	..	..	..	..	6	..	..
Nash Motors Co.....	4	..	1	..	..	..	..
Olds Motor Works.....	3¾	..	6	..	..	..	5
Oneida Motor Truck Co.....	3	..	..	..	..	..	..
Packard Motor Car Co.....	5	..	5	6	..	..	..
Paige-Detroit Motor Car Co.....	6	..	..	6	..	1	..
Patriot Motors Co.....	5	..	..	..	..	..	..
Pierce-Arrow Motor Car Co.....	6	..	..	4	..	..	..
Reo Motor Car Co.....	..	2	..	..	2	..	..
Republic Motor Truck Co.....	..	12	..	..	..	..	..
Selden Motor Truck Corp.....	3	..	1	4	3	..	..
Service Motor Truck Co.....	6	..	..	..	4	5	..
Stewart Motor Corp.....	6	14	..	..	..	..	..
Stoughton Wagon Co.....	1	..	..	..	..	..	..
Traffic Motor Truck Corp.....	..	7	..	..	..	..	..
Trailmobile Co.....	3	..	3	..	..	..	..
Warner Mfg. Co.....	1½	..	..	1½	..	..	..
White Co.....	8	7	3	9	3	..	..
J. C. Wilson Co.....	..	7	..	..	..	..	..
Number of Pages.....	122¾	93	32½	56½	29⅞	19¾	24
Number of Advertisers.....	29	14	13	9	8	7	6

### THE RECORD OF MOTOR TRUCK ADVERTISING FOR FIVE YEARS

1915	Advertisers	1916	Advertisers	1917	Advertisers	1918	Advertisers	1919	Advertisers
<i>The Digest</i> .....	11	<i>The Digest</i> .....	21	<i>The Digest</i> .....	39	<i>The Digest</i> .....	32	<i>The Digest</i> .....	36
<i>Collier's</i> .....	7	<i>Scientific Am.</i> ...	12	<i>Sat. Eve. Post.</i> ...	27	<i>Sat. Eve. Post.</i> ...	28	<i>Sat. Eve. Post.</i> ...	29
<i>System</i> .....	7	<i>Sat. Eve. Post.</i> ...	12	<i>Collier's</i> .....	15	<i>Scientific Am.</i> ...	23	<i>Leslie's</i> .....	18
<i>Rev. of Reviews</i> ...	6	<i>System</i> .....	11	<i>Scientific Am.</i> ...	14	<i>Collier's</i> .....	16	<i>Scientific Am.</i> ...	16
<i>World's Work</i> ...	6	<i>Rev. of Reviews</i> ...	8	<i>System</i> .....	10	<i>Leslie's</i> .....	11	<i>Collier's</i> .....	16

IMMEDIATE National Publicity

# The Literary Digest



## "AVAILABLE ALWAYS—"

Point by point, by the test of actual service, the Available Truck Co. has proved the staunchness of its product.

Every unusual shock, though it may seem to hammer hardest on springs, radius rod or brakes, is, in the last analysis, a test of the axles.

The fundamental soundness of support and drive required for the Available Truck is assured by the Timken-Detroit Axles. You'll find Timken-Detroit Axles under 55 of America's well known and well built motor trucks.

Abbot-  
Downing  
Acason  
Ace  
Acme  
\*Ahrens-Fox  
Armleder  
Atterbury  
Available  
Brinton  
Brockway  
Chicago  
Clydesdale  
\*Denby  
Diamond T

Dorris  
Fageol  
Federal  
G. M. C.  
Garford  
Gary  
Hahn  
Hendrickson  
King-Zeitler  
Kissel  
Kleiber  
Koehler  
Lewis-Hall  
Locomobile  
Maccar

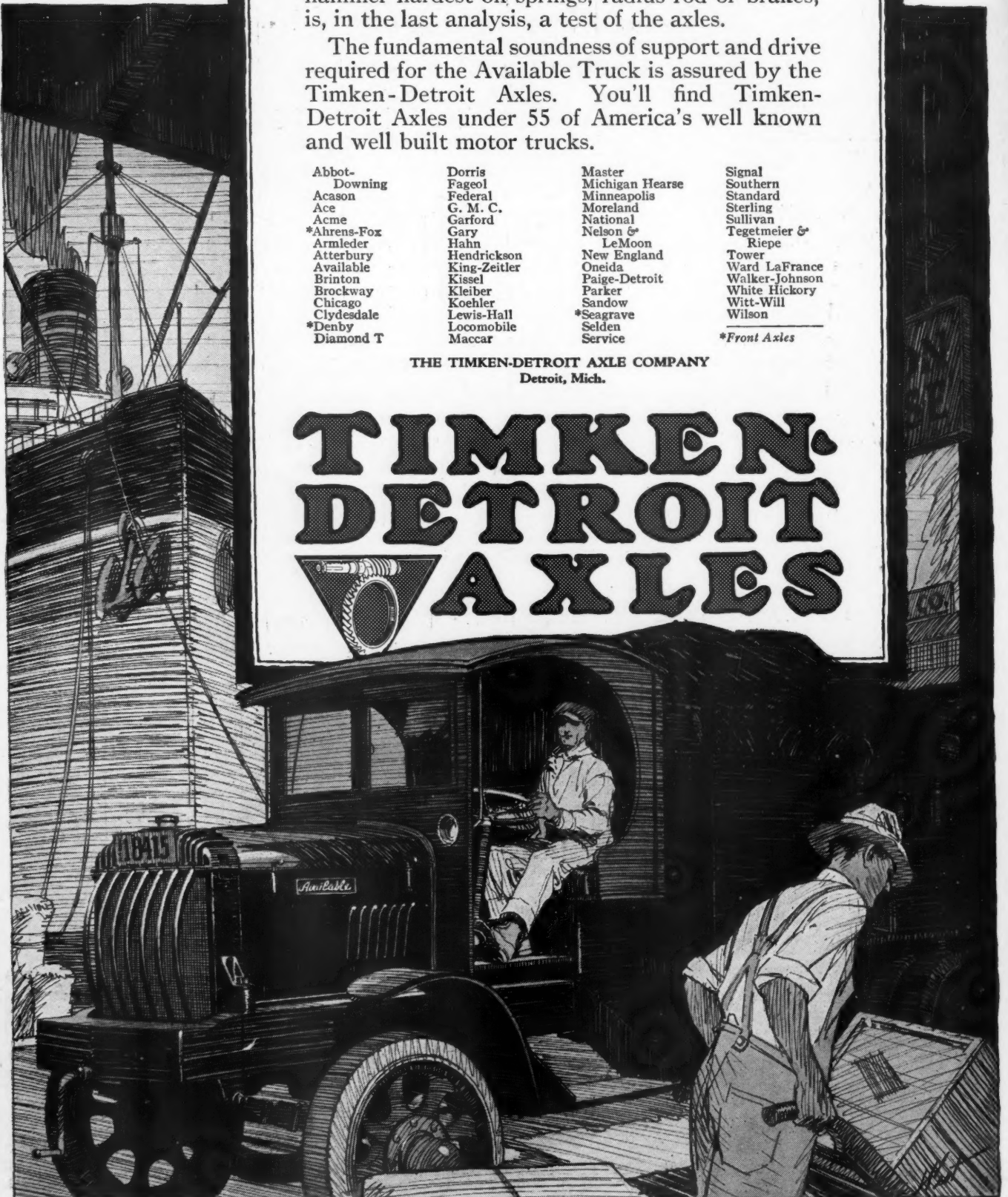
Master  
Michigan Hearse  
Minneapolis  
Moreland  
National  
Nelson &  
LeMoon  
New England  
Oneida  
Paige-Detroit  
Parker  
Sanderow  
\*Seagrave  
Selden  
Service

Signal  
Southern  
Standard  
Sterling  
Sullivan  
Tegetmeier &  
Riepe  
Tower  
Ward LaFrance  
Walker-Johnson  
White Hickory  
Witt-Will  
Wilson

\*Front Axles

THE TIMKEN-DETROIT AXLE COMPANY  
Detroit, Mich.

# TIMKEN- DETROIT AXLES





*Hall Trucks are the development of forty-six years experience in the fabricating and transportation of structural steel*

## At the Threshold of a Great Opportunity

*What Are You Going to Do With It?*

**B**ETWEEN the years of 1920 and 1925 the truck business in America is going to surpass that of any previous ten years in its history.

Out of approximately 7,500,000 motor vehicles in operation in America today, less than 650,000 are used for commercial purposes.

Think what that means! With less than one-tenth as many trucks as there are pleasure cars and the tremendous need for commercial carriers all over the country, it follows that during the next decade the *big* growth in automotive sales will be in *trucks*.

So far the surface has only been scratched. And those businessmen who today secure the agency of a worthy truck will be the successful dealers of tomorrow.

Hall dealers are successful because Hall Trucks and the men who make them are successful.

Coincident with this new and greater opportunity for selling trucks comes the completion of our new four acre factory greatly increasing our output and enabling us to open many new and rich territories.

*Write for catalogue and full particulars of our liberal selling agreement*

*Hall Trucks are made in 2½, 3½, 5 and 5 to 7 Ton Models, any type of body. With this line you can fill any man's trucking needs*

### LEWIS-HALL MOTORS CORPORATION DETROIT, MICHIGAN

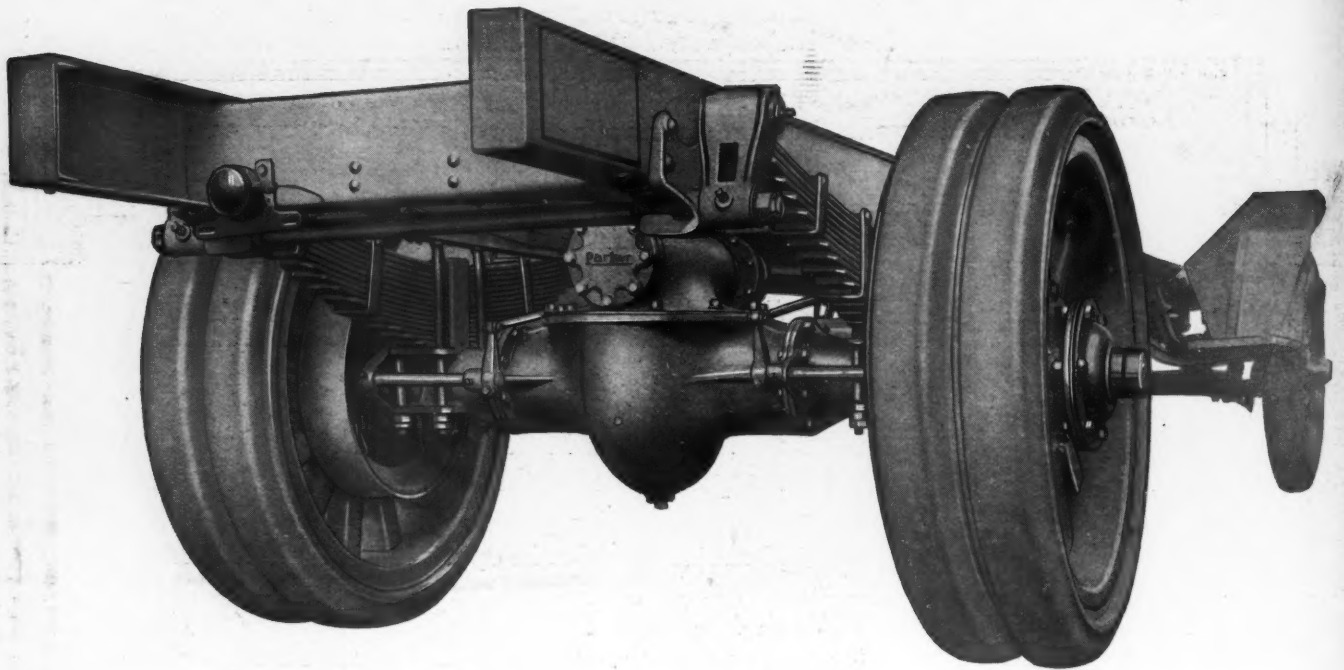
*Formerly Motor Truck Division of the Lewis-Hall Iron Works*

*Address Dept. 5*



# HALL TRUCKS





## Here's again why the Parker is pushing ahead in sales —

**T**HE picture above further proves the higher standard material, construction and finish of the Parker truck—which, with the Parker *indefinite* time and mileage guarantee, are why men are buying Parkers against the whole field of trucks. *Definite* Parker value is winning out against spectacular selling talk of *occasional* performance and mere *promises* that feature other trucks. And that is why dealers are having no trouble selling Parkers, *keeping* them sold—and selling *more*. Find out fully *why*—get the new completely descriptive-illustrated Parker catalog—*Write now!*

# Parker

TRUCKS

2, 3½ and 5 Ton.

### Are you the Dealer?

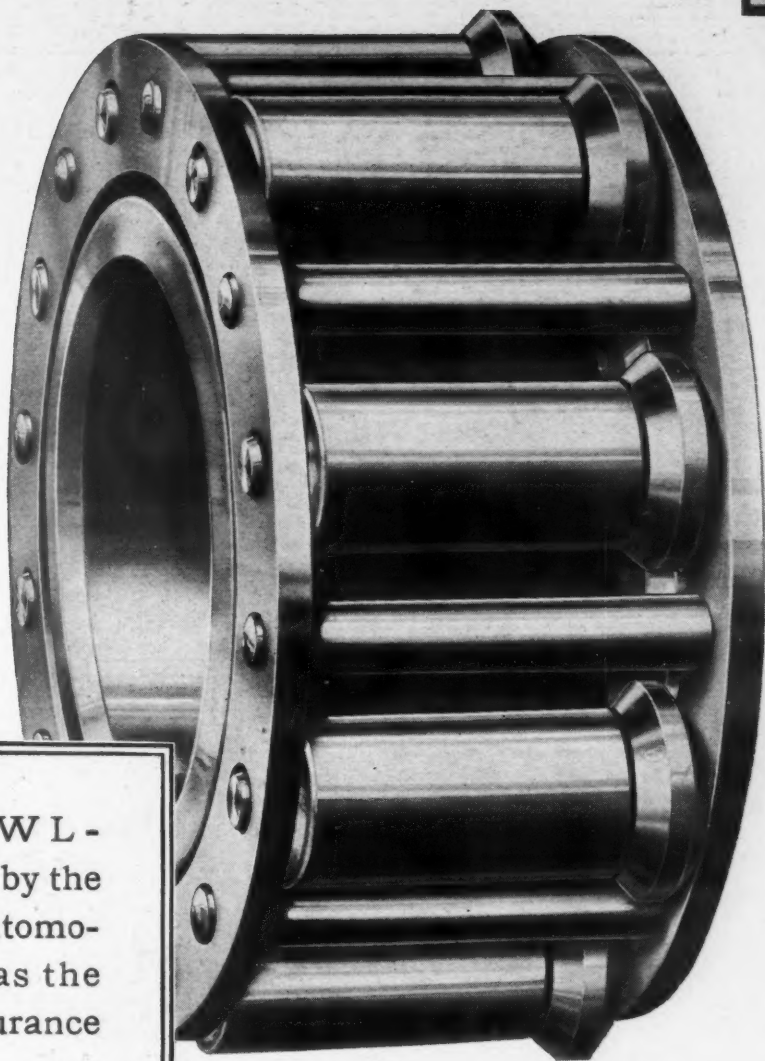
**I**F you are the big business man, quality-type of dealer, with an eye to the truck future *as well as* the present, we want you with us, and you want us. Write for the dealership we have for you, if your territory is still open. *Write now!*

## Parker MOTOR TRUCK Company

MILWAUKEE, WISCONSIN. U. S. A.

CARRIES THE LOAD

TAKES THE THRUST



ACKNOWLEDGED by the majority of automobile makers as the best wheel insurance in the world.

**BOWER**  
ROLLER BEARING CO.  
Detroit Michigan

**Exclusive Bower Features**

Separate bearing surfaces for load and thrust. Parallel raceways. Self-aligning. Never need adjusting. Does not develop end thrust under loads. Will not bind or end-slip.



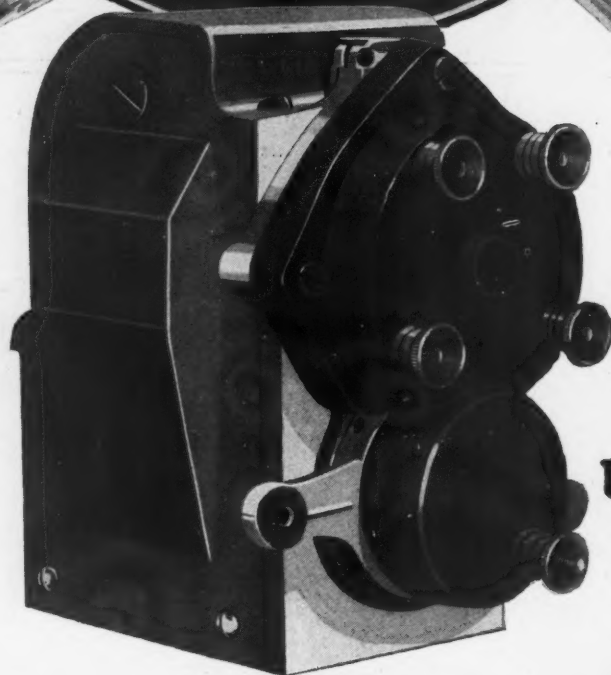




**ORDINARY  
MAGNETOS**  
Fire Like This



Two Way Sparks of  
Unequal Intensity



**The New  
SPLITDORF  
Aero MAGNETOS**  
Fire Like This



Uni-Directional Sparks  
Always the Same

ESTABLISHED  
1858

TRADE

**SPLITDORF**

MARK

SPLITDORF  
ELECTRICAL CO. Newark, N. J.

WORLD'S LARGEST  
MAKERS OF IGNITION EQUIPMENT

USED AS REGULAR EQUIPMENT BY MORE THAN 100 MANUFACTURERS OF FARM TRACTORS







# The Famous Walker Axle

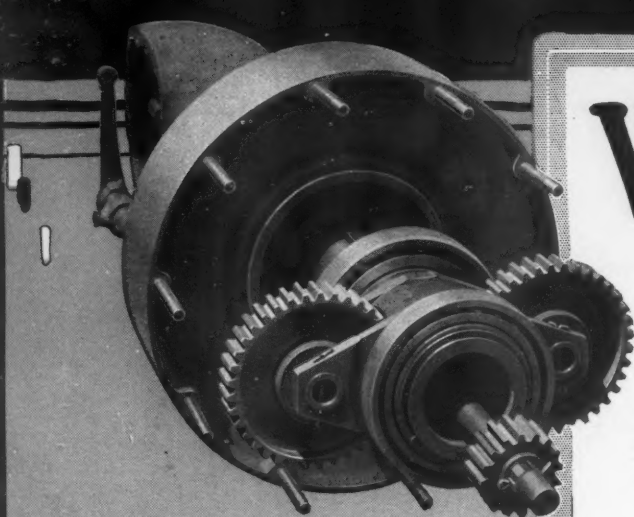


**Increased Factory Facilities  
mean greater production  
and additional economy**

The famous Walker Axle has so thoroughly demonstrated its superiority that the demand promises to outstrip the production capacity of the present plant. A new factory will therefore be erected at 87th and State streets, Chicago, which will effectively solve the problem of building more axles and in addition will provide for the highest possible efficiency and economy in every manufacturing process from raw materials to finished product.







# Why a Walker Balanced Double Reduction AXLE

## WALKER Advantages

Sustained high efficiency.

High road clearance.

Simplicity in construction.

Small power loss.

One-half usual tooth pressure.

Minimum wheel slippage and skidding.

Easy accessibility to all parts.

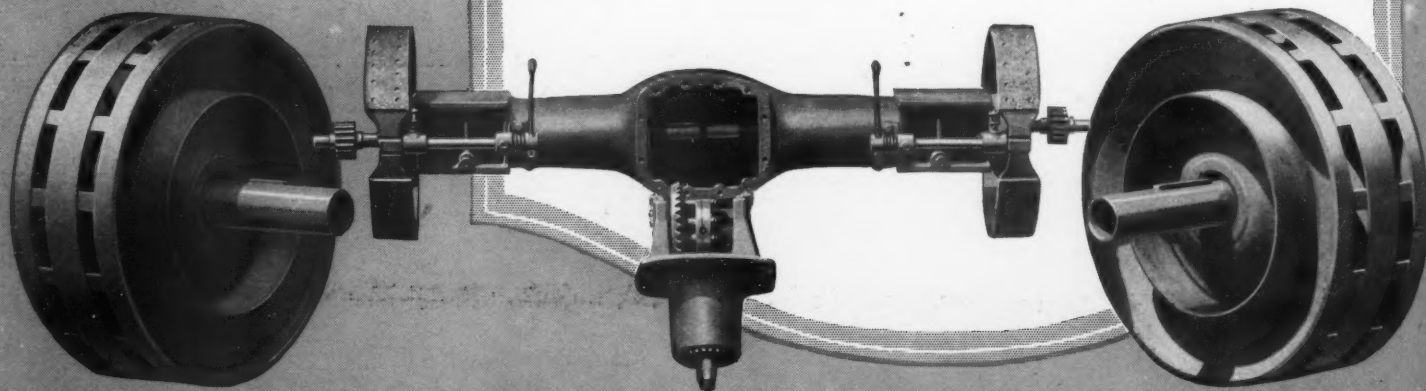
THE famous Walker Axle has proved its superiority during several years of service under widely varying conditions. Its success is due to the fact that it combines the advantages of the chain and sprocket, the worm drive and the internal gear drive without the disadvantages inherent in any of these types.

It parallels closely the chain and sprocket in the application of power. It has the same double reduction and applies the power to the wheels just as directly. The first reduction is made through the pinion and bevel drive gear in the differential housing. Thence the power is carried by a small live axle of the floating type which runs through the center of the housing to the pinion on the wheel end of the shaft. The second reduction is made between the gears in the hub case corresponding to the second reduction in the chain drive which takes place between the sprocket and the wheel. The small pinion in the hub on the wheel end of the floating axle meshing with the two idler gears inside the hub transmits the power to the ring or bull-gear, which is attached to and drives the wheel.

The Walker Drive has the same flexibility and pull, the same simplicity of construction, high road clearance, small power loss and light unsprung weight as the chain and sprocket. It seals the lubricant as perfectly as in the worm gear drive, the gears running in a bath of oil at all times. It protects the working mechanism more perfectly than the usual internal gear drive as it is impossible for dirt to enter the hub case or for the oil to work out into the brakes. The double reduction distributes the power equally at two points, reducing the tooth pressure one-half as compared with the internal gear.

In short, the Walker Balanced Double Reduction Gear meets every condition of the ideal final drive for heavy duty motor truck service.

WALKER AXLE COMPANY, Chicago





# General Motors Trucks

**T**HE makers of GMC Trucks have spent years in the conscientious endeavor to make GMC Trucks the best that money can buy.

That their efforts have been fruitful is proved by the high esteem in which these trucks are held.

The GMC policy of building a quality truck has resulted in GMC Trucks holding first place in the regard of thousands of truck buyers.

Behind every factor concerned in the manufacture of GMC Trucks is plenty of capital in the form of money, factory equipment and organized mechanical knowledge.

GMC representatives are in a fortunate position in the truck business. Their present success is assured and the future shows great promise of profit.

A GMC connection is a valuable franchise from a good many standpoints.

## GENERAL MOTORS TRUCK COMPANY

*One of the Units of the General Motors Corporation*

PONTIAC, MICH., U. S. A.





*"Go On"—I'll Soon Catch Up*

**D**OUBT never enters the head of the chap who employs a Walker Badger Truck Jack. He doesn't know the definition of delays due to defective Jack operation.

Walker Badger Jacks possess in-built quality and a superabundance of it. Each part is as carefully made as though the entire operation of the Jack depended solely upon it. There are no weak features. Every piece from base to lifting cap is 100% perfect. There are no internal disturbances—no hinderance to efficient action by faulty or ill-fitting parts. No binding—no lost power. Every working part machined in gigs. Pawls are of drop-forged steel—virtually indestructible. Automatic lock that stays "put" as long as you want it.

Pressure is evenly distributed; there's no uneven wear anywhere. No wasting away of parts to create trouble, breakage and back-breaking work for user. Every Jack is factory-tested for lifting strength—labeled with load capacity and guaranteed to give absolutely satisfactory, thoroughly efficient service.

A world-wide reputation for thorough dependability renders them essential as standard equipment on quality-built trucks and as regular stock with accessory dealers who endeavor to give their patrons products of highest merit.

Catalog listing all of the famous Walker Badger Line—"A Jack for Every Job"—upon request. Send for it today.

**WALKER MFG. CO.**

30 Hamilton St. RACINE, WISCONSIN



**WALKER**  
**BADGER**  
**TRUCK JACKS**

# DUPLEX TRUCKS

## BUILT FOR BUSINESS

*An actual photograph of a Duplex Limited being lifted clear of the ground by a cable around the windshield frame.*

*This wonderful strength in the cowl, while perhaps startling, is still only typical of the extra strong, rigid construction of the Duplex Limited in every detail and in every part.*

*It is this great Duplex strength and honesty of mechanical construction that makes the Duplex Limited a truck that a business man can buy and use on a practical business basis.*

**The Duplex Limited  
Fills a Wider Market  
Than Probably Any  
Other One Truck in America**

*Scientifically Designed and Balanced—  
Electrically Equipped—Pneumatic  
Tired—Honestly Constructed—Here  
is a Truck That an Honest Dealer Can  
Sell On An Honest Basis.*

**T**HOSE who have studied the motor truck industry and the motor trucking needs of modern business are not at all surprised at the great success of this Duplex Limited.

It has everything in its favor—embodies every requirement that experience has shown to be necessary to successful and economical operation under present day conditions.

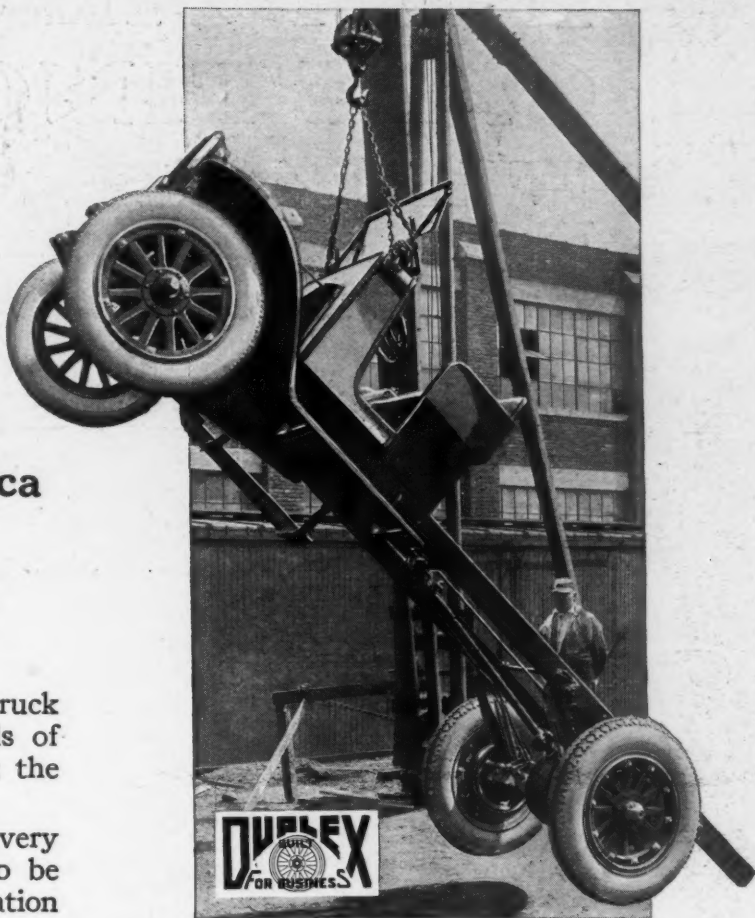
From the standpoint of the buyer there isn't a weakness in it. It is probably the most rugged truck of its capacity ever put out—better balanced and better built.

Its balance is so perfect that one man can easily move it over the floor by hand.

Its motor is so large and so powerful that the gear ratio is  $5\frac{1}{2}$  to 1 and the motor need turn over only 1300 R. P. M. to develop full road speed with full load.

Its engine is properly and amply cooled. It carries two and one-half gallons of water and the water jackets are designed to cool the valve seats, where heat is greatest. Motor meter is encased in radiator shell. It has electric starter and nitrogen electric lamps.

Special patented spring suspension for radiator prevents damage to core solderings and eliminates the



source of leakage. Lubricating oil is strained twice in its circuit. Standard tread—goes anywhere a passenger car can go.

Think over its points for yourself from the viewpoint of a buyer and you can see that here is a truck that really *belongs*. Its no mere makeshift. There is real engineering back of it and a real need for it. It is created to fill a need that really exists—and truck buyers all over America are recognizing that fact.

Get the limited before your customers. This is the time to push it. Everything points to a great growth in the demand. We can only make a certain number this year, and the number will probably be short of the demand.

See the leading farmers in your community, the retailers in all lines, the motor express companies—every one is a prospect for the Limited because the Limited so well and so economically fills their trucking needs.

This is the Duplex year. The business is there in your community. Get your full share—and now is the time to start.

**Duplex Truck Company**  
**Lansing • Michigan**

*One of the Oldest and Most Successful Truck Companies in America*



# FROM INDIVIDUAL CASTING TO FINAL INSPECTION



## ECO Numethod CONCENTRIC PISTON RINGS



*Inspection of Castings*

ECO Rings are made from individual castings. Infinite care is exercised in guarding against defects either of material or workmanship.

The foundry chemist determines with accuracy the composition of raw materials and their mixing in proper proportion.

First to make piston rings from individually-cast ring castings, we have demonstrated for years their superiority in tensile strength, closeness of grain, and wearing qualities.

From such time-tested material Numethod Rings are manufactured by methods and equipment protected by patents.

Years of study and experience enable us to produce the Numethod Rings, scientifically and mechanically right. **THEY WILL DEVELOP MAXIMUM POWER AND EFFICIENCY.**

Write for our booklet. It gives the points to look for in piston rings as well as a list of ring sizes for tractors, trucks, motorcycles and automobiles.

**ECO MANUFACTURING CO.**

53 State Street

Boston, Massachusetts



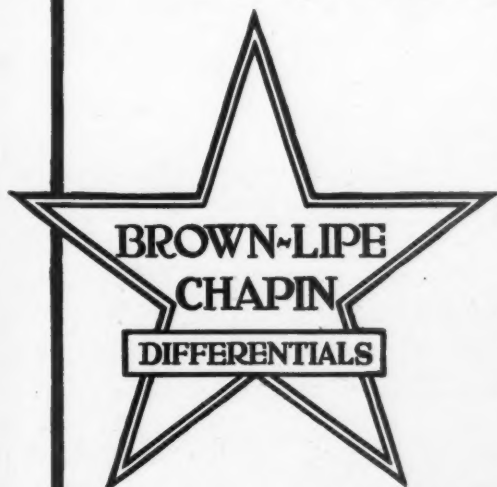
## BROWN-LIPE GEARS Do Not Strip

**S**PECIALY selected and treated steel and generous allowance of stock give each Brown-Lipe gear a strength several times greater than that required by its rating.

The operator in the above photograph is determining the pressure test of a gear made from a sample of steel. This machine is also used on tensile and compression tests, while another one measures resistance to impact.

Every strain that a gear meets in service is thus applied in manifold form to samples of steel. Then when the best steel for each purpose has been established, it is carefully analyzed, and each shipment of bars from the mill must show the same chemical analysis, or it is rejected.

Equal care and exact knowledge mark all manufacturing processes of Brown-Lipe Gear transmissions and Brown-Lipe-Chapin differentials. This explains why Brown-Lipe products are first choice among builders of high grade automotive vehicles.



**BROWN-LIPE GEAR CO.**  
TRANSMISSIONS

**BROWN-LIPE-CHAPIN CO.**  
DIFFERENTIALS

Both at SYRACUSE, N. Y.

**No. 15 of 40 Reasons for Superiority**

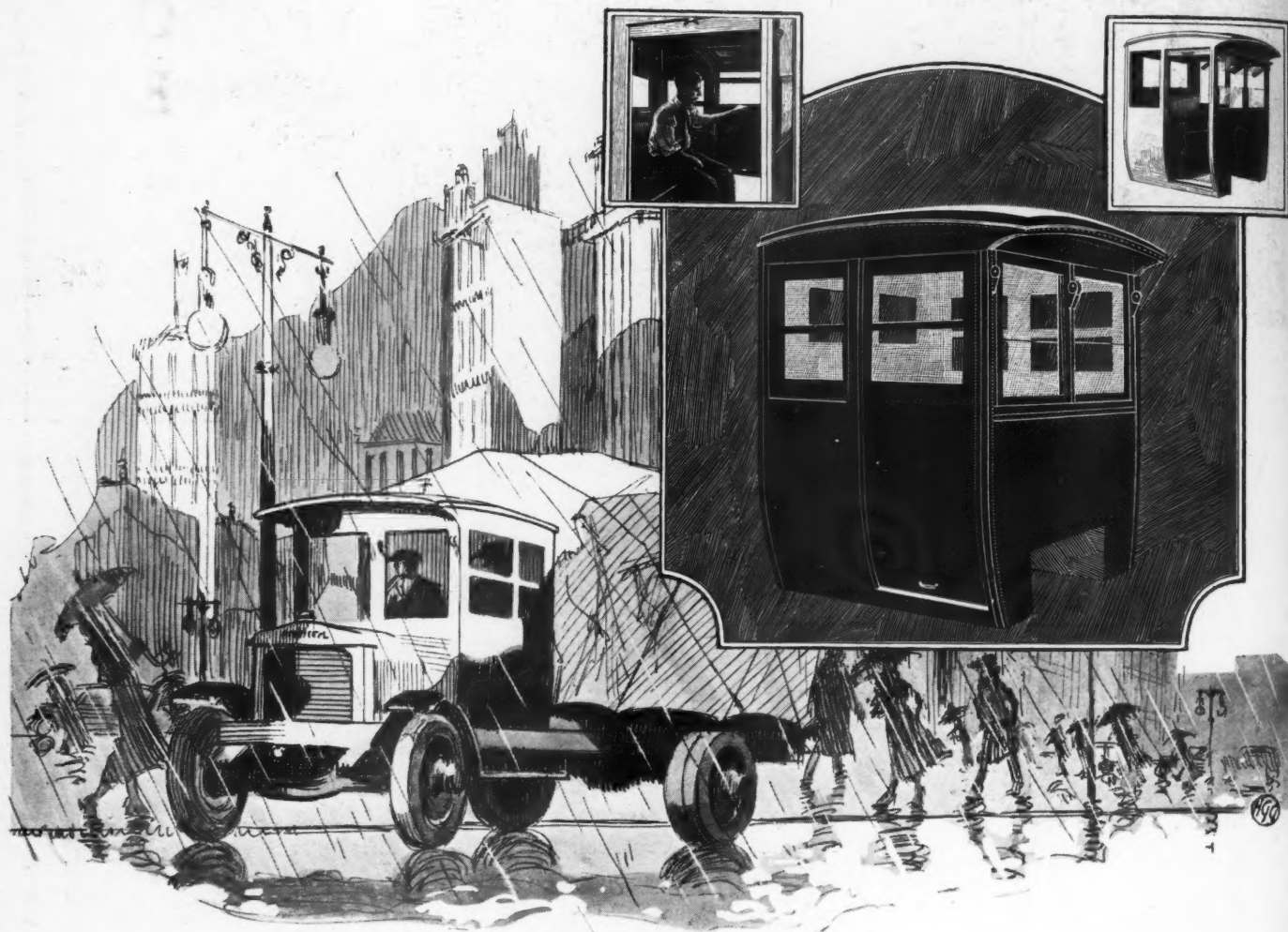


# Weatherproof

ALL - SEASON

## TOPS AND CABS

With the Patented Sliding Doors



**D**ETROIT Weatherproof Cabs provide complete protection against rain, snow, dust, heat and cold.

Constructed of sheet steel cushioned on wood, reinforced with heavy angle irons, and amply braced with non-rigid corner irons, each cab is a long-lived attractive driver's compartment that can be attached to any truck.

It's patented, flexible, non-rattling wind and

weatherproof doors slide without forcing into the top of the cab; its side and rear windows drop into the body; the upper halves of the sectional windshield fold in or out. Large windows provide wide vision and the driver may signal without an instant's delay.

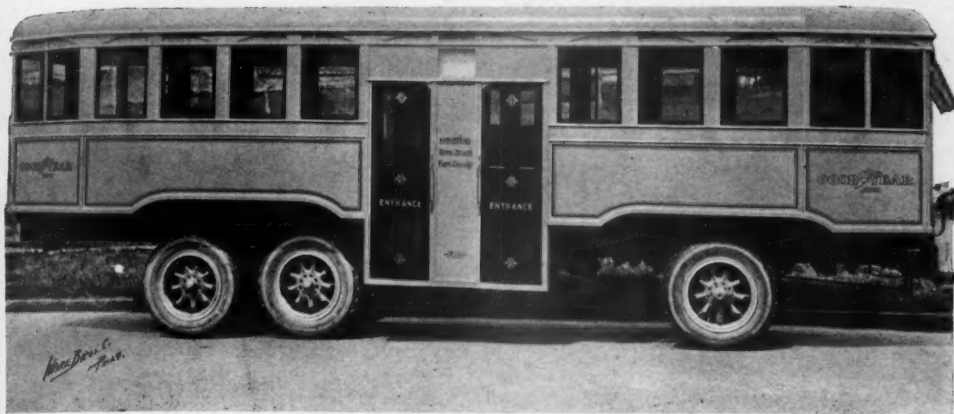
There is a Weatherproof Cab for every size and type of motor truck; each is ready to attach for use when delivered. Write for complete data, literature and diagrams.

DETROIT WEATHERPROOF BODY COMPANY  
PONTIAC, MICHIGAN

# VEHISOTE:

(Trade-Mark)

*Efficiency  
General Satisfaction  
Economy*



## VEHISOTE SIDE PANELS

Guaranteed not to split,  
crack or check. Think  
what this guarantee  
means to YOU!

*Bus of Goodyear Rubber Company, in use at Akron, Ohio, of  
Vehisote construction, built by Caley & Nash, Rochester, New York*

Vehisote, like steel, is made by a fluxing process in which all the fibres run together, interlock and interlace so that it becomes all one homogeneous material in which there is no point of separation, no grain as in wood, no laminations as in built-up or stuck-together products. Therefore, it cannot check or split.

It is the nature of wood to split and crack under strain. How is this natural defect to be cured by gluing pieces of wood together?

Wood is wood, has always been and always will be.

# THE PANTASOTE COMPANY

11 Broadway, NEW YORK

CHICAGO: Peoples Gas Building

DETROIT: Penobscot Building

### JOBBER:

The Scovel Iron Store Co., San Francisco, Cal.  
Sligo Iron Store Co., St. Louis, Mo.  
E. D. Kimball & Co., Chicago  
E. C. Kadow & Co., Chicago  
C. H. Tiebout & Sons, Brooklyn, N. Y.  
N. Langer & Sons, Brooklyn, N. Y.  
H. D. Taylor & Co., Buffalo, N. Y.  
W. E. Kleine & Co., New York City  
H. Hett & Sons, New York City

W. T. Crane Carriage Hardware Co., Newark, N. J.  
Gerhab & Ludlam, Philadelphia, Pa.  
John C. Hills, Trenton, N. J.  
Mossman-Yarnelle Co., Fort Wayne, Ind.  
Wm. Stockhoff, Louisville, Ky.  
Faeth Iron Company, Kansas City, Mo.  
Minneapolis Iron Store Co., Minneapolis, Minn.  
Nicholas, Dean & Grigg, St. Paul, Minn.  
Shadbolt & Boyd Iron Company, Milwaukee, Wis.





Specify—  
**"Barnes-Made"**  
**Auto Clutch Springs**

Get a spring of maximum flexibility and longevity.

The "Barnes-Made" Auto Clutch Spring is the result of diligent research and experiment. It is wound from full-size stock, has more working coils, yet meets

a specified weight test and is guaranteed not to "set."

It is of standard type, yet built in exact accord with customers' specifications. Of dependable quality, because of the specially tempered steel that's in it.

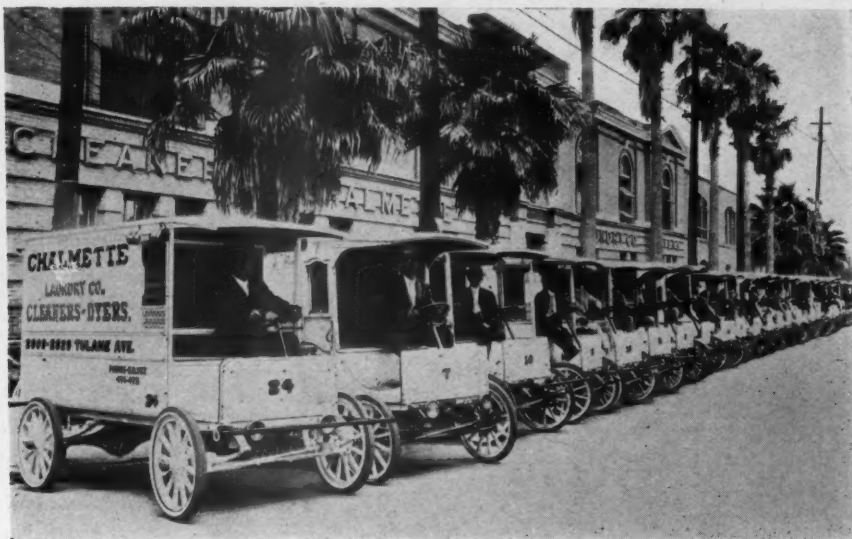
*Prompt Deliveries*

**THE WALLACE BARNES COMPANY**

*"Spring Makers for Three Generations"*

Main Office and Works:  
 BRISTOL, CONNECTICUT

Western Sales Division  
 BOOK BUILDING, DETROIT



# For Short Hauls Sell 1c-a-Mile

# WARD ELECTRICS

That's all it costs for current to operate a 750 lb. capacity WARD. Compare that with the fuel cost of *any* gasoline-powered truck.

You do the fair thing by your customers—and yourself—only when you sell them the most economical type of transportation unit which their individual requirements plainly indicate. For short-haul deliveries WARD ELECTRICS are incomparably the most economical; just as surely as gasoline-driven trucks are better for long hauls.

## Evidence That "Proves Up"

We would like to show you the evidence that WARDS are the most profitable type for department stores, butchers, grocers, laundries, bakers, dairies, and many other businesses.

We want to offer you the proof that WARDS, used by innumerable concerns making frequent-stop deliveries, daily reel off 25 to 40 miles on a single charge, though capable of much more.

We will gladly give you figures that make perfectly clear how the absence of vibration in the WARD cuts repair bills, reduces depreciation and gives it a much longer life than the ordinary

truck. In a WARD ELECTRIC all expense stops when the truck stops.

Finally, we want to give you facts showing why it will *pay you BIG* to round out your gasoline-propelled line with WARD ELECTRICS. Write NOW.

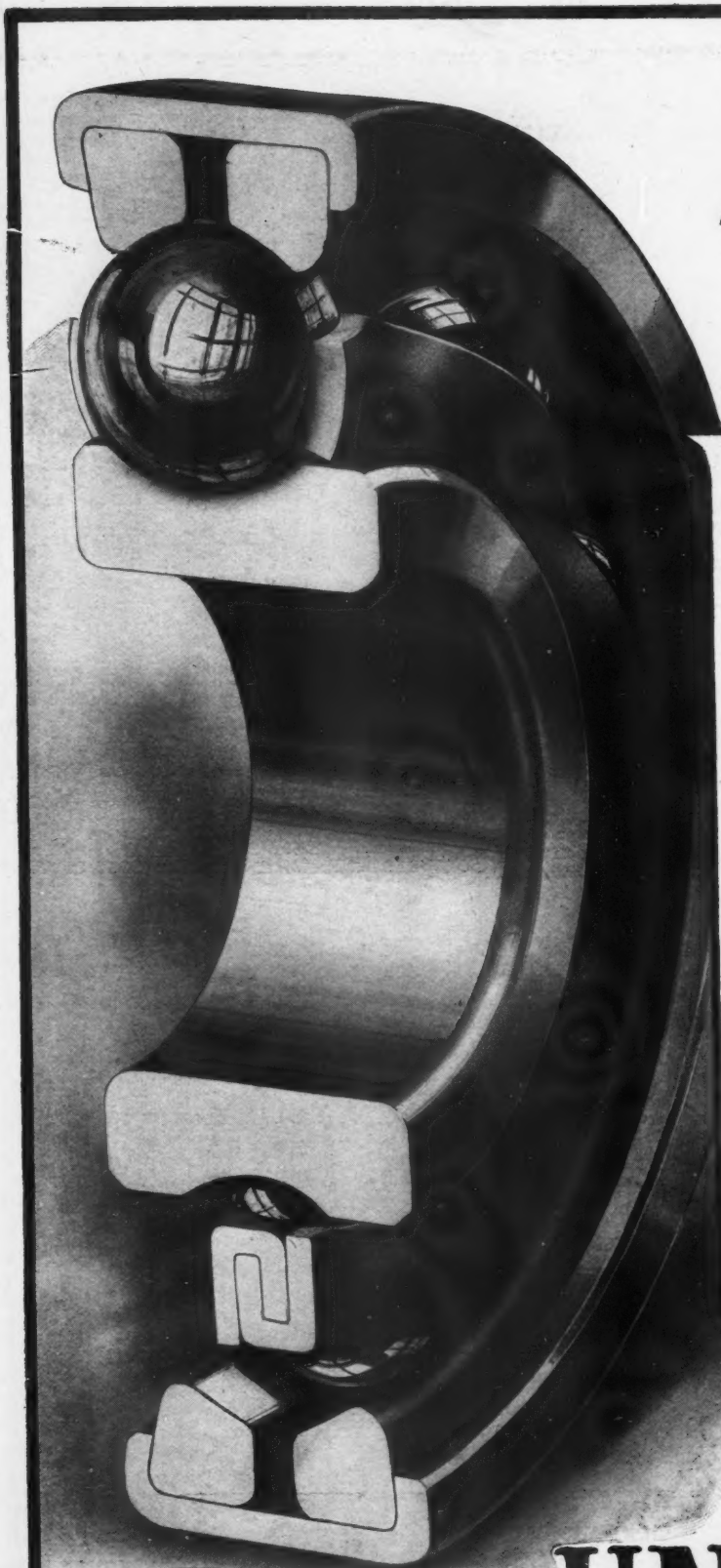
Some of our last month's sales were:

- One New York Concern—200 Ward Electrics
- One Chicago Company—38 Ward Electrics
- One Cleveland Baker—20 Ward Electrics
- One Kansas City Manufacturer—14 Ward Electrics

**WARD MOTOR VEHICLE COMPANY**  
Mount Vernon, N. Y.

# WARD ELECTRICS





## Shock-Proof

Only a blow straight thru the center can shatter a properly heat-treated steel ball. Such a blow is impossible of delivery in the Schatz Universal Annular Ball Bearing. This is only one of the exclusive features of Schatz design.

Increased strength, ability to withstand 300 per cent to 400 per cent greater thrust than any other annular ball bearing, every refinement in manufacturing practice—these things are responsible for our success.

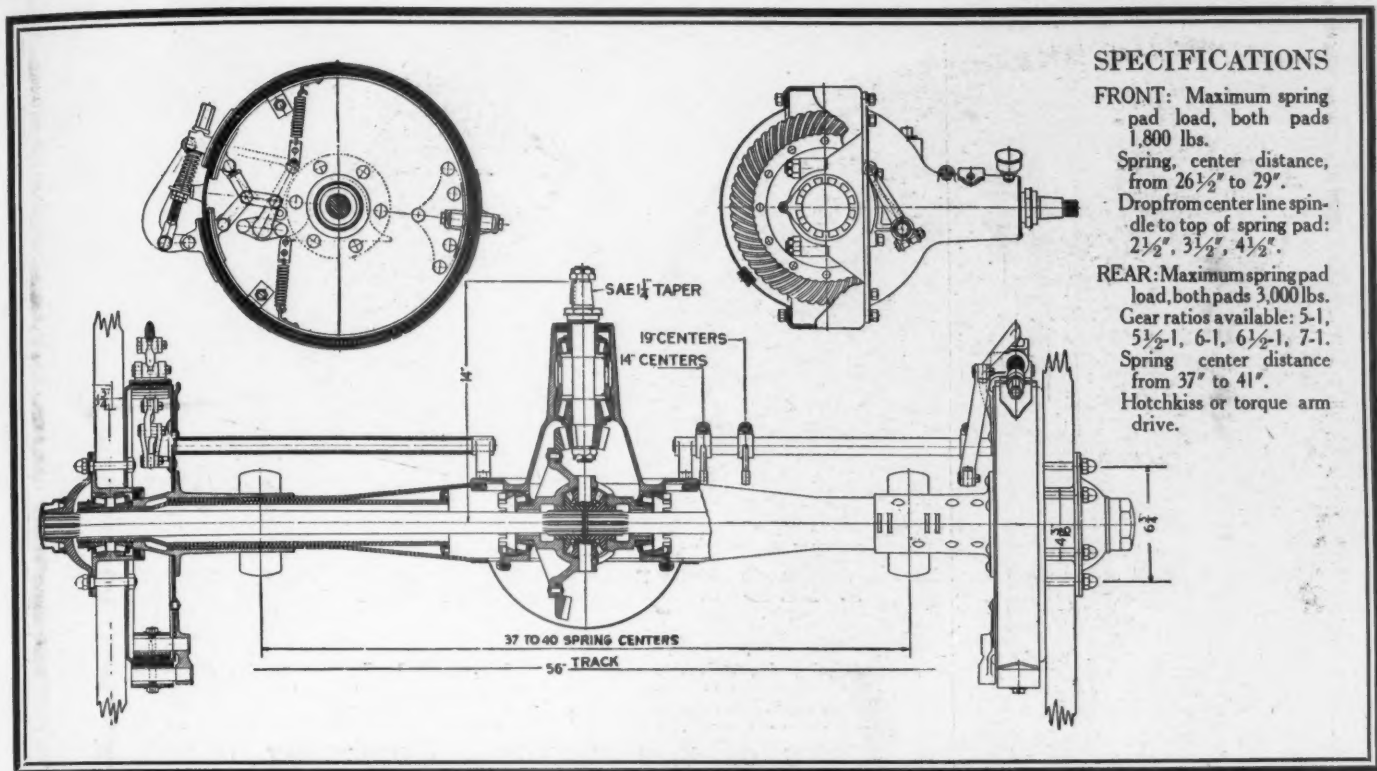
*Specify the bearing with a margin of safety—Schatz Universal.*

**The Federal Bearings Co., Inc.**  
Poughkeepsie, N. Y.

Pacific Coast Representatives:  
**Frank M. Cobbledick Co.**  
693 Mission Street San Francisco, Cal.

*Great Britain:*  
37 Sheen Road, Richmond, London

*Schatz*  
**UNIVERSAL**  
*Annular*  
**BALL BEARING**



#### SPECIFICATIONS

**FRONT:** Maximum spring pad load, both pads 1,800 lbs.

Spring, center distance, from 26 1/2" to 29".

Drop from center line spindle to top of spring pad: 2 1/2", 3 1/2", 4 1/2".

**REAR:** Maximum spring pad load, both pads 3,000 lbs.

Gear ratios available: 5-1, 5 1/2-1, 6-1, 6 1/2-1, 7-1.

Spring center distance from 37" to 41".

Hotchkiss or torque arm drive.

## Columbia Special One-Ton, Bevel Gear for HIGH SPEED TRUCKS

**C**OLUMBIA Special Axles for One-ton high speed trucks are designed to take all strains day after day without protest.

The Columbia One-Piece-Housing Rear Axle for this class of service is stronger and therefore more efficient for this special duty than is possible with any other housing design. It is the result of

a careful study of requirements involving road tests and laboratory tests of the severest nature.

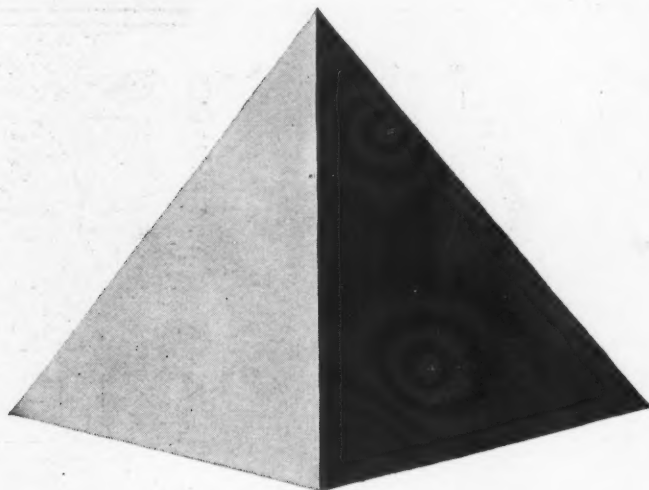
The One-Piece-Housing, built of one piece of steel with a single weld, alone adds 50% to the strength of this axle.

Columbia Special Front Axles are equally strong and safe.

The Columbia Axle Company, Cleveland, Ohio







## The Pyramid of Service

*This is the emblem by which Service Motor Trucks may now be identified on the highways of the nation. Look for the Red Pyramid on the radiator. It stands for enduring Service and reliability.*

Ten years ago Service Motor Trucks embodied the first definite steps toward complete shock insulation. Six years later the present Service System of SCIENTIFIC CUSHIONING was pronounced complete. Today with records of thousands of trucks before us—we know that this Service development sets a new standard of motor truck reliability.

The Service System of SCIENTIFIC CUSHIONING protects the engine, transmission, differential and other vital parts from the ruinous effects of shock and vibration—the greatest enemies of truck efficiency. Road shocks, strains and excessive vibrations are absorbed by scientific cushions located at strategic points in the truck, *before they reach the vital parts.*

The result is that Service Motor Trucks maintain normal power and

speed for years under most strenuous road abuse. Their remarkable records of work done on schedule time have amply proved these facts to dealers as well as users.

Service Motor Trucks, embodying this perfected system of SCIENTIFIC CUSHIONING, are built in 7 models with 80 combinations of power, speed and capacity. Among them is a type exactly suited for every use.

Dealers find that these features, plus dominant advertising programs in *The Saturday Evening Post*, *Literary Digest*, *Leslie's*, *System* and a great many trade papers, make a powerful motor truck selling proposition.

If you can give service to your customers and properly represent us, write immediately for full information.

Service Motor Truck Co., Wabash, Indiana, U. S. A.

**Service**  
**MOTOR TRUCKS**  
*With the Red Pyramid on the Radiator*

# EATON

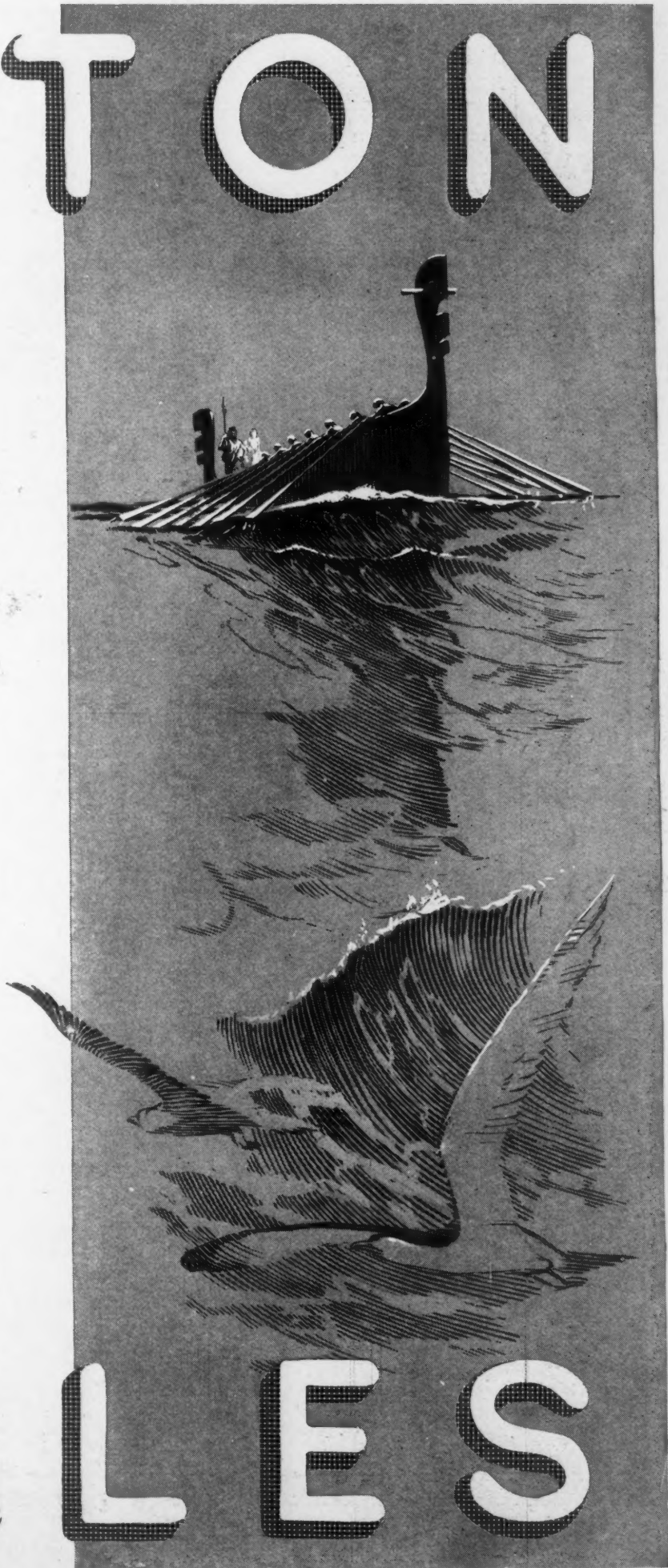
*... the slave of old lashed  
to his mighty oar ...*

Like the slave of old  
Lashed to his mighty oar,  
The rear axle of a motor truck  
Must propel the modern galleys  
of commerce.  
If it be a staunch and honest axle,  
It will serve faithfully —  
Even in that unrelenting service.  
Such axles those are  
That bear the stamp of Eaton.

THE EATON AXLE COMPANY  
CLEVELAND, OHIO

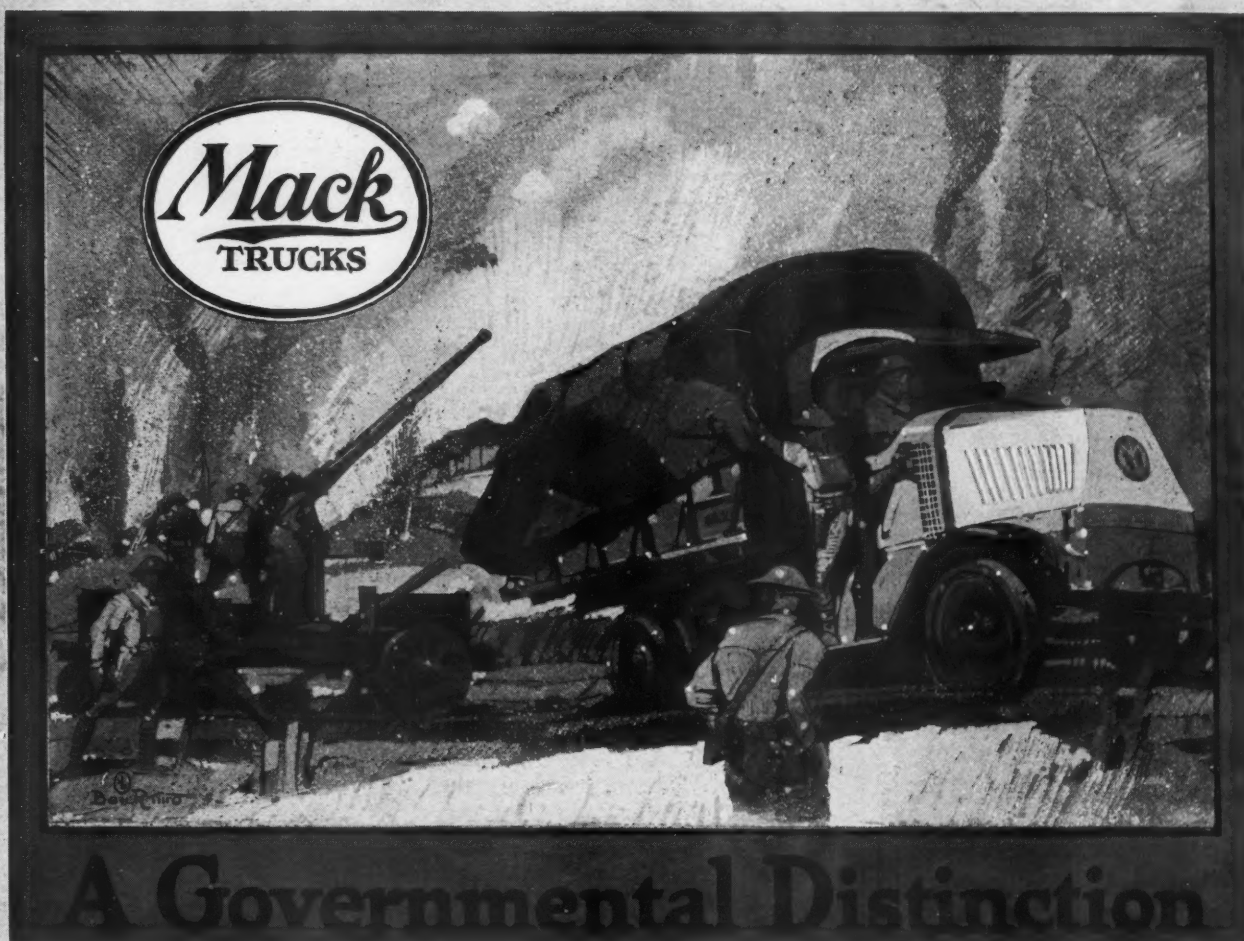
THE AXLE DIVISION OF THE STANDARD PARTS COMPANY

OTHER DIVISIONS ARE: THE PERFECTION SPRING COMPANY, THE  
BOCK BEARING COMPANY, THE STANDARD WELDING COMPANY



# AXLES





**Mack**  
TRUCKS

**A Governmental Distinction**

**A**T frequent intervals since the war ended, considerable publicity has been given to the government standardization of motor trucks.

We take this opportunity to point out a salient fact in this connection. Of all motor vehicles classified as standard, four types—2, 3, 4 and 5—are designated as the motor truck class. In the first three of these types, namely, 2, 3 and 4, several different makes of motor trucks are listed as standard government equipment in each case.

But in type 5 (Five tons and over, including special engineer trucks) the Mack is the only truck named as standard. In other words, the "Bull Dog" is the one and only truck permanently retained by the U. S. Army as standard heavy-service equipment.

The Liberty truck, which was used in the war, was solely the product of a concentrated effort toward quantity production to meet a great emergency.

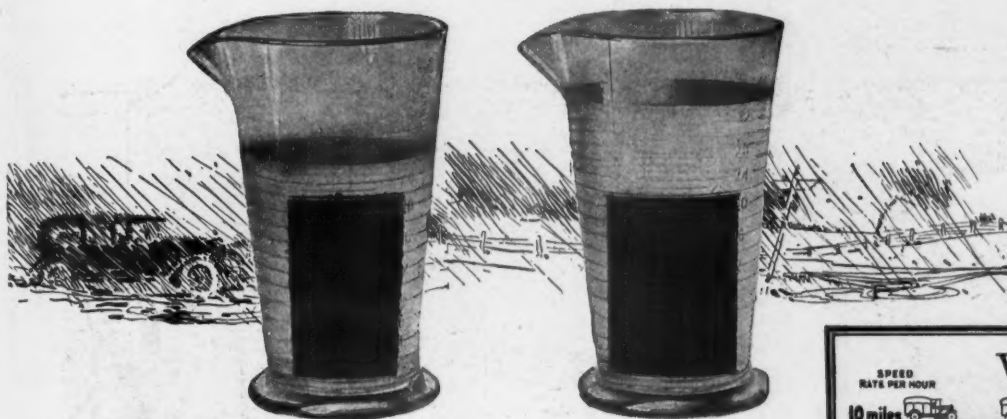
These facts are more or less common knowledge today. It is not generally known, however, that shortly after the United States declared war noted government engineers conducted exhaustive motor tests which the Mack engine alone survived. The U. S. Engineers requisitioned such quantities of Mack heavy-duty chassis that our production of all light models—1½ and 2 tons—had to be suspended during the war term.

Our greatest military men state that there is no real difference between military and commercial motor transportation. In both classes of service, the best equipment is necessary to record the greatest possible ton-mileage within a given time.

INTERNATIONAL MOTOR COMPANY, NEW YORK

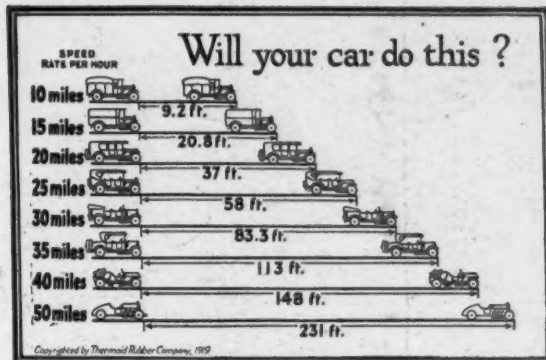


**"PERFORMANCE COUNTS"**

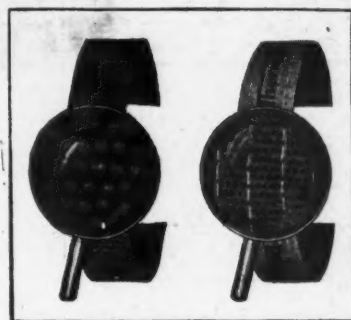


Thermoid Hydraulic Compressed Brake Lining, when submerged in boiling water for one hour, absorbs only 8%, while ordinary lining absorbs as much as 23%.

## The brake lining that resists moisture



This chart, worked out by leading automotive engineers, shows how quickly a car should stop at various speeds if the brakes are in good condition and working right.



**Ordinary Woven Lining**

Notice the loosely woven texture. Wears down quickly and unevenly. Loses its gripping power as it wears.

**Thermoid Hydraulic Compressed Brake Lining**

Notice the compact texture. Wears down slowly. Gives uniform gripping surface until worn wafer-thin.

**W**ILL the brake lining that you put on a car swell with every passing shower—making the brakes grab and causing a dangerous skid? This is one bad result from the use of woven brake lining—that absorbs water, oil and gasoline.

The moisture-resisting qualities of Thermoid Brake Lining have been proved conclusively. Comparative tests made by Cornell University prove that Thermoid absorbs only a fraction as much moisture as any other brake lining on the market. Study carefully the results of these tests shown on this page.

### How Thermoid Brake Lining is made moisture-proof

An exclusive process known as "Grapnalizing" makes Thermoid Brake Lining practically moisture-proof. The asbestos fabric of Thermoid Brake Lining is impregnated with "Grapnal." Under tremendous hydraulic pressure and terrific heat Thermoid Brake Lining becomes a compact homogeneous mass which wears down slowly and evenly.

### Why motorists prefer Thermoid

There is 40% more material by actual weight in Thermoid than in

ordinary brake lining. This fact and the special processes used in its manufacture give Thermoid Brake Lining the following advantages:

1. It wears much *longer* than ordinary linings
2. It wears down *uniformly*
3. It has a better *wearing surface*
4. It *resists moisture* to an unusual degree.

When you sell Thermoid Brake Lining you sell the brake lining that gives the biggest value in actual wear and reliability to the customer—that provides the best safeguard against accident.

Co-operate with the movement for safer motoring. Render a real service to your customers. Build up a more profitable business in brake lining.

Send for the Thermoid Brake Inspection Stopping Chart, also the 1920 Thermoid Sales Plan—full of interest to every dealer and garage.

### Thermoid Rubber Company

Factory and Main Offices: Trenton, N. J.  
New York Chicago San Francisco Detroit  
Cleveland Atlanta Philadelphia Pittsburgh  
Boston London Paris Turin

Canadian Distributors:

The Canadian Fairbanks-Morse Co., Limited, Montreal  
Branches in all principal Canadian cities

# Thermoid Brake Lining

## Hydraulic Compressed

Makers of "Thermoid-Hardy Universal Joints" and "Thermoid Crolide Compound Tires"



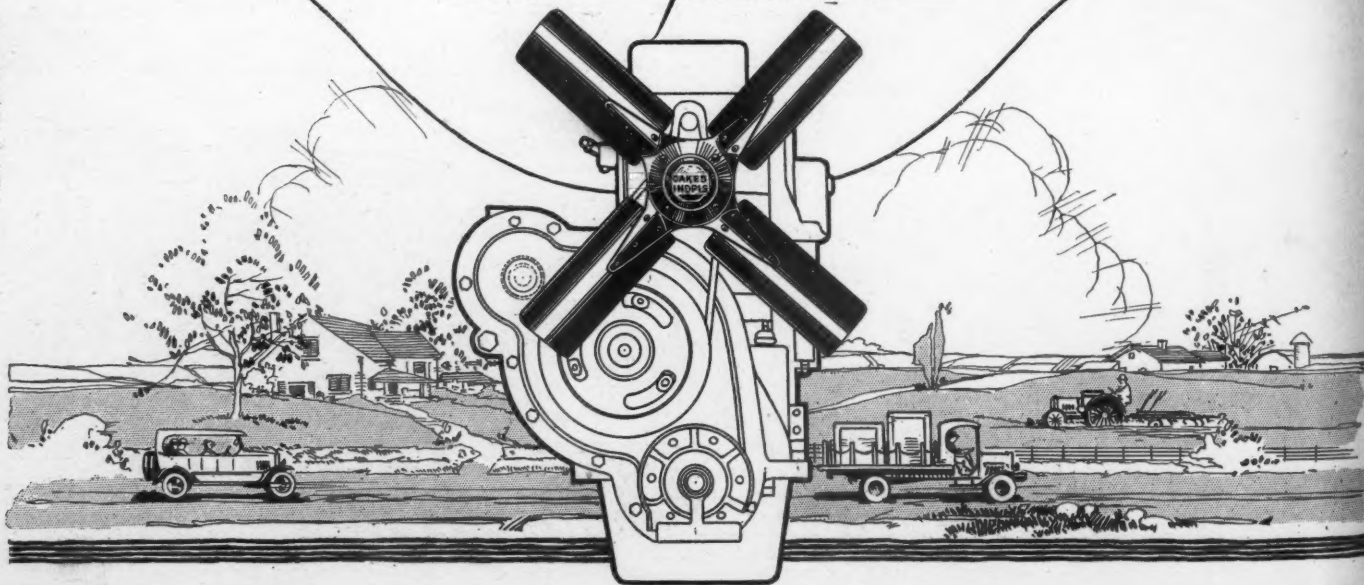


# *Efficient Cooling* Oakes Fans

The motor vehicle builder who selects an Oakes Fan gets a product of eleven years' specialized experience - a quality fan embodying all the features essential to efficient cooling

*The* OAKES COMPANY  
*Indianapolis, U.S.A.*

PACIFIC COAST REPRESENTATIVE: A.H. COATES CO. 41 SPEAR ST. SAN FRANCISCO



# Obenberger

Look for the name on high grade forgings

## Here's an "Output" Picture for the Production Manager

Our ads have told you that Obenberger can deliver forgings in any quantity. Here's evidence—a big order of tractor crankshafts going through.

Giant crankshafts are piled up like cord wood—hundreds of them—awaiting heat treatment.

Twenty hammers are busy day and night at the Obenberger plant. More are being added, enabling us to accept new business; for we accept it only as we can render full Obenberger service, and that includes *deliveries on schedule*.

Obenberger prices are always fair—Obenberger quality is guaranteed. With us "the customer is always right."

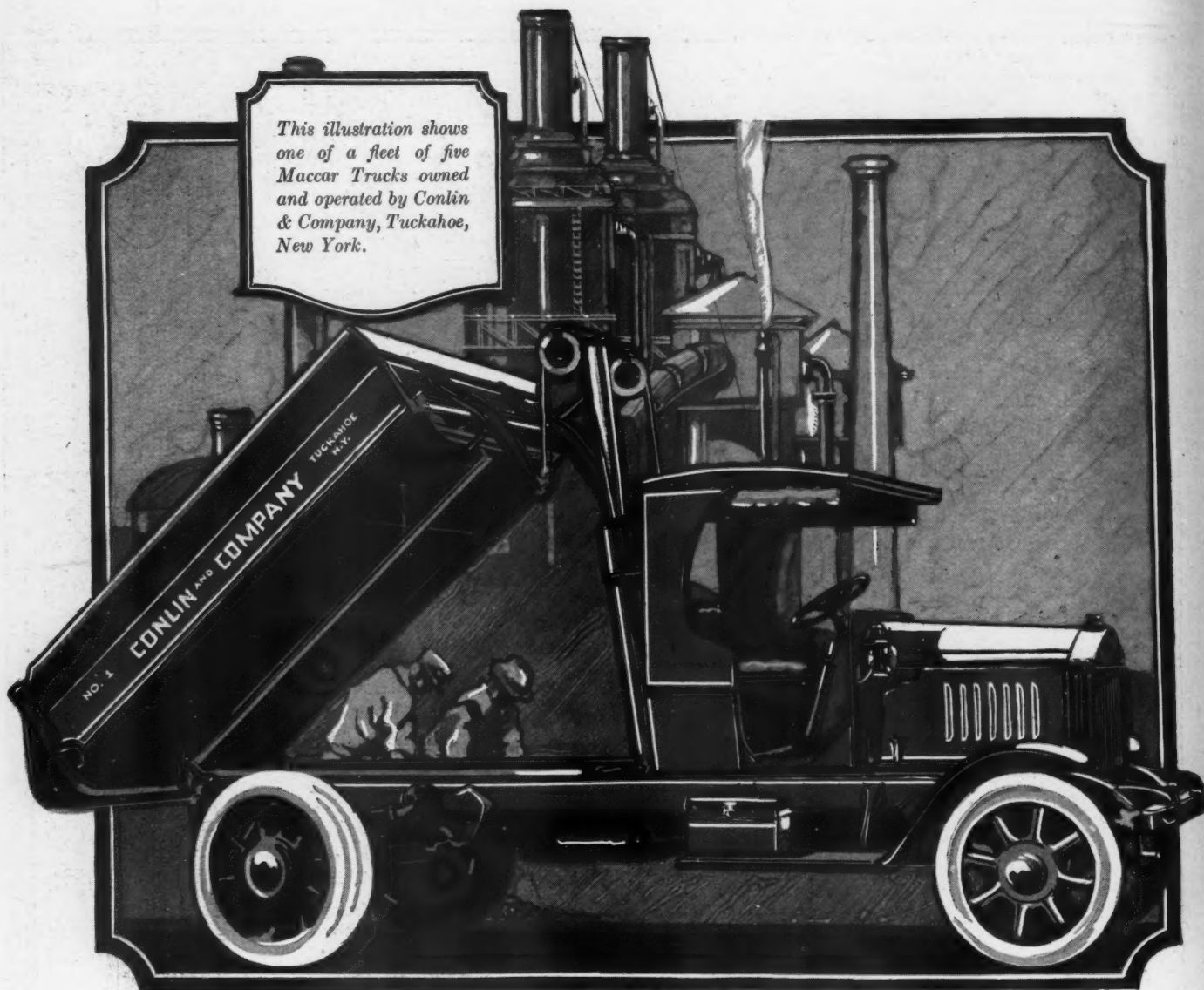
You will be pleased with Obenberger service when you try it. May we consult with you on your next forging job? Quotations from blueprints gladly furnished.

**JOHN OBENBERGER  
FORGE COMPANY**  
West Allis, Milwaukee, Wis., U.S.A.



# Forgings





**“—building a garage for 10 trucks  
and they’ll all be Maccars”**

*Conlin & Company, Tuckahoe, N. Y.*

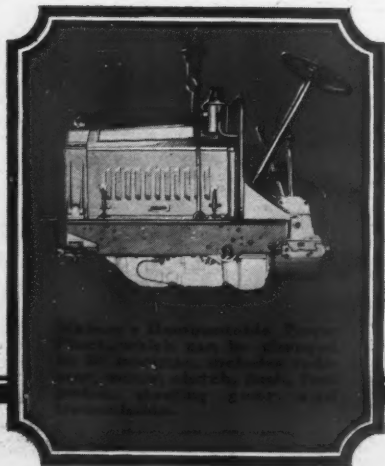
For more than two years, as regularly as the rising and setting of the sun, Conlin & Company’s first Maccar Dump-truck has been hauling full loads of cement, brick, sand and other building materials. The maintenance expense totals less than twenty-five dollars.

Having bought four more Maccars, each giving the same economical, unfailing service, it is small wonder that Conlin & Company’s new garage will hold only Maccar Trucks.

*Maccar Trucks range from 1 to 5½ tons carrying capacity  
Dealers: Write for the Maccar proposition*

**Maccar Truck Company, Scranton, Pa.**

**“the truck of continuous service”  
Maccar**





The Tread-mill—used for centuries in the irrigation of rice fields in the Orient

The untold blessings and luxuries of mechanically generated Power were attained by Man only after countless centuries in which Energy came solely from the straining effort of human muscles. It is little wonder, therefore, that men of today are moved instinctively to value and admire the smooth-running perfection of modern automotive power. ¶ It is little

wonder, too, that the Continental organization derives unusual satisfaction from the value that the automotive world attaches to its product—little wonder that it is united more firmly than ever in its resolve to let nothing interfere with the maintenance of high quality standards in the motor that is marketed under the Continental Red Seal.

## CONTINENTAL MOTORS CORPORATION

Offices: Detroit, U. S. A.

Factories: Detroit and Muskegon

Largest Exclusive Motor Manufacturers in the World

# Continental Motors

STANDARD POWER FOR TRUCKS, AUTOMOBILES AND TRACTORS



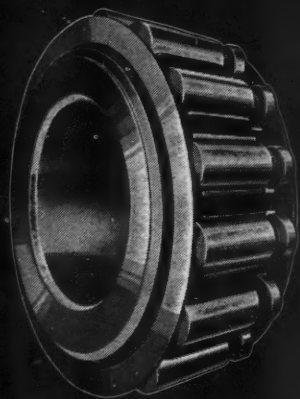
# Motor Truck Express

## *Ship by Truck!*

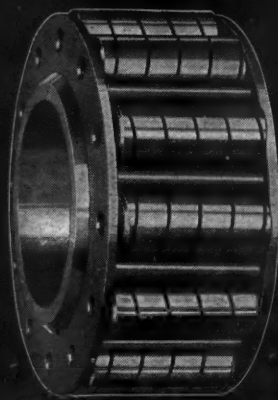
**M**OTOR truck express means faster, safer, more satisfactory delivery of goods. It is accelerating the expansion of commerce and industry. It is revolutionizing the older, slower methods of moving freight, particularly on short hauls.

The Bearings Service Company with direct Branches and Authorized Distributors in over 1,200 main centers enables the truck owner, garage and repair man to obtain official factory service on genuine new Timken, Hyatt and New Departure Bearings without delay.

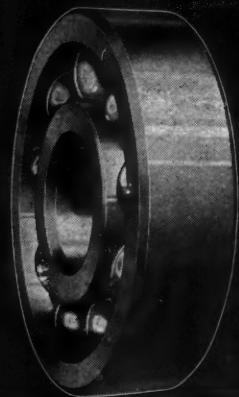
This nation-wide service is an important factor in establishing the practicability and permanency of motor truck express.



**TIMKEN**



**HYATT**



**NEW DEPARTURE**

THE Bearings Service Company acts as the service department of the Timken Roller Bearing Company, Hyatt Roller Bearing Company and the New Departure Manufacturing Company.

*Branches at*

Arlanta	Newark
Baltimore	New Orleans
Birmingham	New York
Boston	Oakland, Cal.
Brooklyn	Oklahoma City
Buffalo	Omaha
Chicago	Philadelphia
Cleveland	Pittsburgh
Dallas	Portland, Ore.
Denver	Richmond
Detroit	St. Louis
Evanston	St. Paul
Indianapolis	San Francisco
Kansas City	Seattle
Los Angeles	St. Louis
Milwaukee	Trenton
Minneapolis	

*Over 1,000 Authorized Distributors in other main centers*



# BEARINGS SERVICE COMPANY

General Offices: Detroit, Michigan





High freight rates—the absence of available cars—makes motor truck transportation more essential and convenient than ever before.

Dependable power is necessarily of vital importance to efficient motor truck hauling.

Any time—any place the new Stromberg Carburetor can and does bring about an abundance of power—effects quick and positive starting—reduces fuel costs to a minimum.

Write for complete facts. State name, year and model of your truck.

**Stromberg Motor Devices Co.**

64 E. 25th Street    Department 936    CHICAGO

**New STROMBERG Does it!**  
CARBURETOR



Copyright 1920, by the General Tire and Rubber Co.

Every business has some essentially staple and fundamental product by which its general financial prosperity or weakness can be judged. In the Nation's case it is steel. In a tire dealer's business it is motor truck tires.

We have never felt any great apprehension concerning the business future of the dealers who sell The General Tire—because a larger percentage of the tires we manufac-

ture go into commercial service than those of any other pneumatic maker.

The strong position that The General Cord Truck Tire has won with Big Business is an anchor to windward for this factory and its dealers—and a guarantee of the permanency of our mutual prosperity.

Built in Akron, Ohio, by The General Tire and Rubber Company.

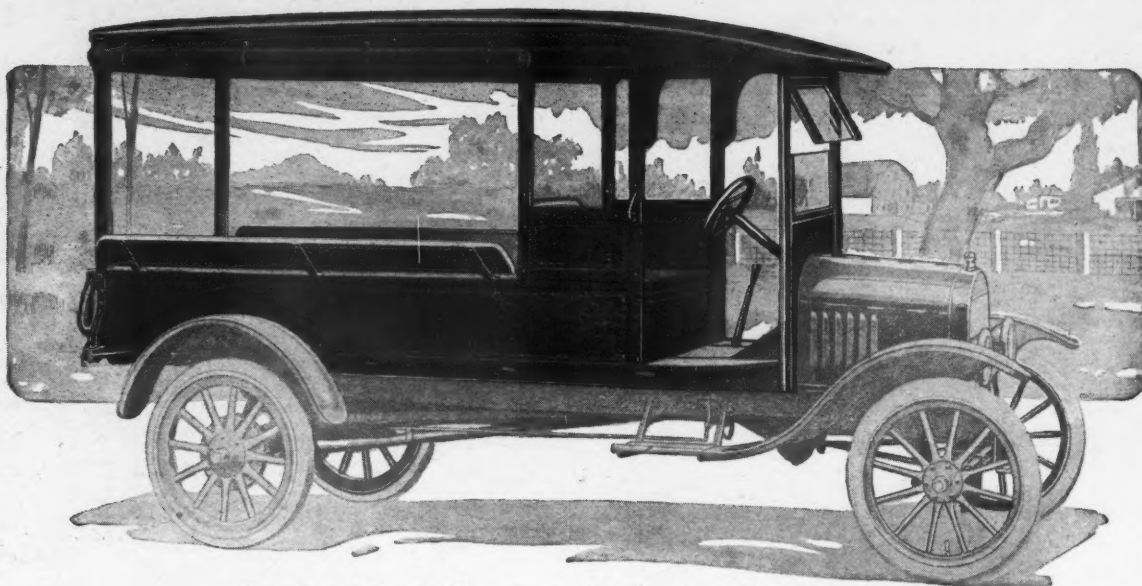


# THE GENERAL CORD TIRE



# Martin-Parry

## Commercial Bodies



*Martin-Parry Body No. 450A---a Six Post Express Body for the Ford Truck Chassis.*



*Martin-Parry Body No. 226A---an Open Express Body for the Ford Model "T" Chassis.*

**Increased Production Makes  
Possible Immediate Shipments**

### DISTRIBUTING POINTS

Atlanta, Ga.	Martin-Parry Corp.
Boston	Martin-Parry Corp.
Buffalo	Martin-Parry Corp.
Chicago	Martin-Parry Corp.
Denver	Auto Equipment Co.
Detroit	Schoof-Gracey Body Co.
Duluth, Minn.	Foster Motor Co.
El Paso	Tri-State Access. Corp.
Kansas City	Henry Seested
Milwaukee	Wis. Body & Sales Co.
Minneapolis	Northwest Body Co.
Oklahoma City	H. N. Knight Sup. Co.
Pittsburgh	Pittsburgh Com. Body Co.
Richmond, Va.	Benj. T. Crump Co.
St. Louis	Bailey Auto Body Sales Co.
San Francisco	Flynn & Collins
Spokane, Wash.	Universal Auto Co.

## Two Splendid, Well-Built Express Bodies for Fords

**H**ERE are two serviceable express bodies, built in the big Martin-Parry factories at York, Pa., for Ford Truck and Model T Chassis. Attractive in appearance and sturdily constructed. Joints are well ironed to insure strength and long service.

The carrying capacities of both bodies are ample to accommodate maximum loads. Merchants in all lines, transfer companies, truck raisers and scores of other businesses will find them the best answers to their needs.

The roof on body No. 450A is supported by six posts, which are securely braced. This makes a permanently rigid roof. Weatherproof roll curtains at sides and rear give full protection to load and driver in bad weather.

Dealers everywhere find these bodies easy to sell because they give such splendid service. You, too, can make quick sales and increase your profits by selling Martin-Parry Bodies. Built in styles for every need, and in sizes to fit the chassis you sell.

*Write or wire us for sales plan and dealers' price list.*

## Martin-Parry Corporation

*The Largest Commercial Body Builders in the World*

**York, Penna. —Main Offices and Factories— Indianapolis**



An actual threshing scene  
with Transports playing an active part

## Winning the Farm Market —as Well as the City

**A**LERT Truck Dealers are turning to the farm market for motor trucks more earnestly than ever before. It is a big and growing market—for which Transport has built from the beginning.

The Transport Line includes a model for every farm need. With its extra strength and power, its reduction of friction and its cleaner burning of fuel, the Transport Truck is especially fitted for the hardest farm hauling service. The new Transport oiling and the Alemite high-pressure systems automatically take care of Transport lubrication. This is only one of Transport's many superior points.

If your territory is not closed, write us for details.

**TRANSPORT TRUCK COMPANY, Mount Pleasant, Michigan**  
*Builders of "The Frictionless Truck"*

Four models for 2000, 3000, 5000 and 7000 lb. service.  
Pneumatic tires optional at extra cost on all models.



# TRANSPORT

## INTERNAL GEAR DRIVE TRUCKS





## "Talking Points" That are More Than Talk

Truck buyers have remarkable memories. They remember every advantage mentioned by the dealer in making the sale. And they hold the truck to a strict accounting.

That's where Acme dealers have the advantage. Acme proved units not only *sound* well but *perform* well.

The finest units of the automotive industry are built into every Acme. Each proved unit used is a recommendation in itself and is favorably known to truck buyers everywhere.

Write for details of the Acme franchise. Also ask about the recent nation-wide investigation among Acme owners.

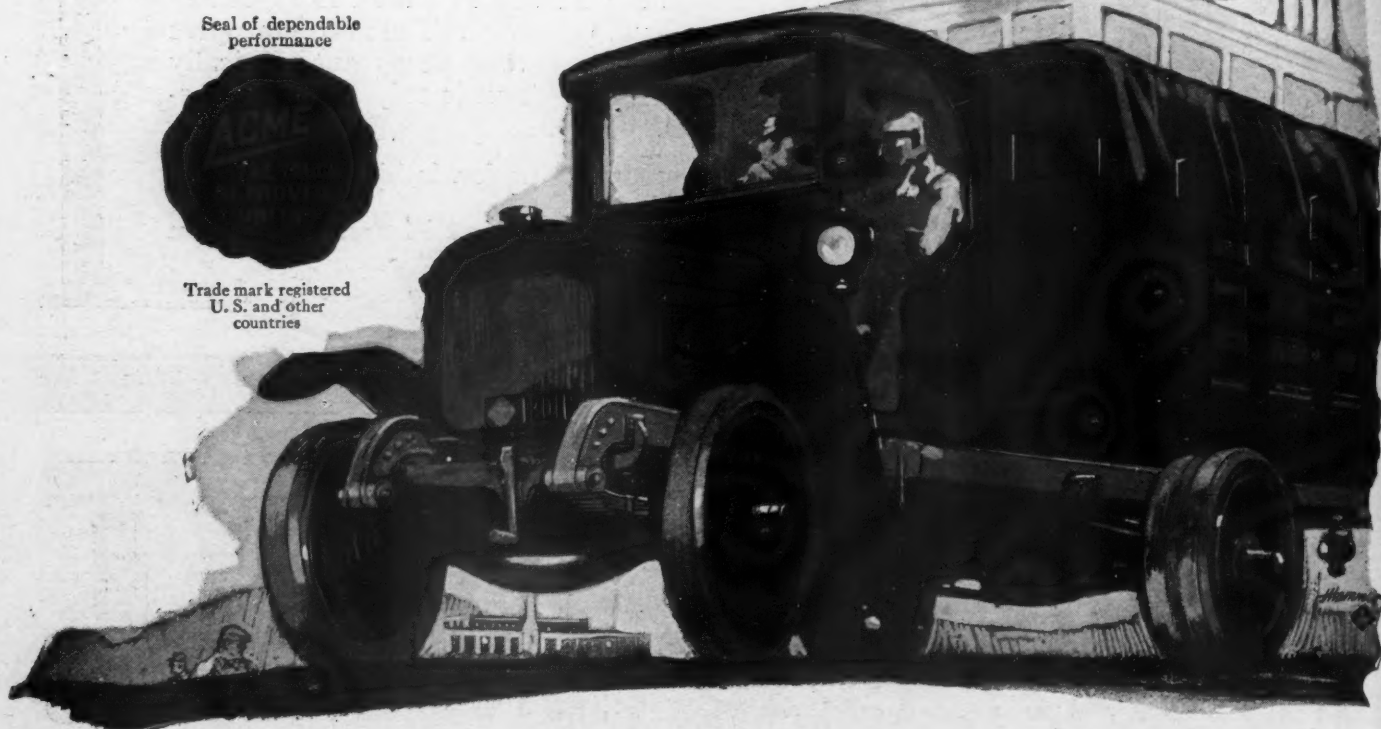
*Built in 1, 1½, 2, 3½ and 5 ton models*

ACME MOTOR TRUCK COMPANY, 361 Mitchell Street, Cadillac, Mich.

Seal of dependable  
performance



Trade mark registered  
U. S. and other  
countries



## "Strength that outmatches road hardships"

When a truck bumps heavily on the rails of a grade crossing or some other road obstruction, you hear comments like these: "It's a wonder that jolt didn't smash the springs" or "That's pretty tough on the axles."

But you *never* hear a word about the parts that are first to withstand the blow—the WOOD Wheels. In their case the possibility of injury or breakage is never considered.

The unfailing ability of WOOD Wheels to stand up throughout years of rough and tumble service is recognized everywhere.

This is another reason why WOOD Wheels have been used for years and will continue to be used on the world's best trucks.

**AUTOMOTIVE WOOD WHEEL  
MANUFACTURERS' ASSOCIATION**  
105 West Monroe Street Chicago, Ill.

NOTE THE  
WOOD WHEELS  
EVERYWHERE



# WOOD WHEELS

for MOTOR VEHICLES



# Prevent This

by Installing Gill  
One-Piece  
Piston Rings



## ONE CYLINDER GONE

Imagine the engine in the picture running—with one cylinder cut away.

Think of the strain on the connecting rod, crank-shaft, bearings—nearly every part of the motor and driving mechanism.

Think of the gas wasted, and the lubricant thinned into uselessness by the gasoline which finds its way into the oil base.

That's what happens when "she misses."

Take out the spark plug. If it is covered with a black, greasy gum, the cylinder is scored or out of round, or else the rings are not keeping oil from the firing chamber.

Unless piston rings are made of the right kind of gray iron they cannot cope with the varying conditions of speed, temperature, and pressure in a gas engine cylinder. They lose their tension and become brittle.

At any price SUCH piston rings are mighty expensive things to have around.



Thirty-three Branch Offices prepared to give practically 24-hour service on Gill One-Piece Piston Rings to *every* jobber, supply store, dealer, garage and repair shop in the country.

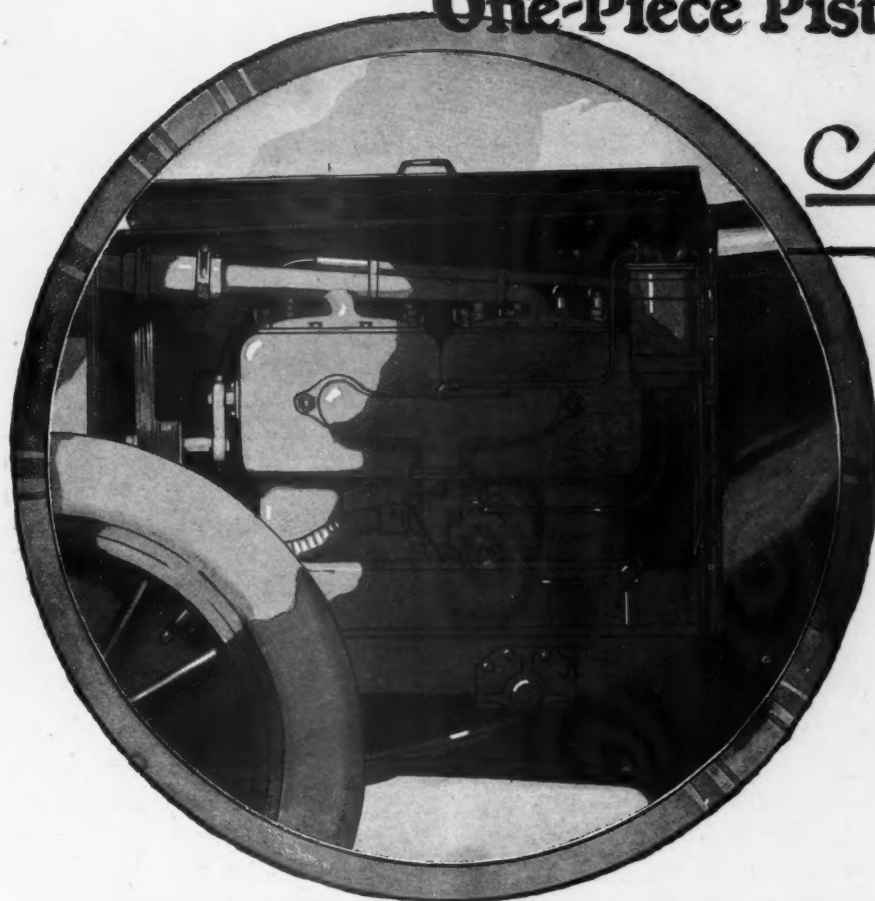
## The Gill Manu- Chicago,

Sole Foreign Agents:  
AUTOMOTIVE PRODUCTS CORPORATION  
Woolworth Building, New York, N. Y.

# Gill

## One-Piece Piston Rings

*Assure  
—this*



### ALL FOUR WORKING

When the engine's hitting on all four, six, eight or twelve, as the case may be, the motorist sits back with a happy smile and drinks deeply of the joys of the open road.

BUT, his contentment will be short-lived unless his piston rings are long-lived.

And the life of a piston ring depends largely upon the texture of the iron of which it is made.

Gill Piston Rings are cast singly. And since unusually fine mixtures are required for individual castings Gill Rings **MUST** have an exceedingly close texture. That is, the tiny particles of metal are more closely, more compactly knitted together.

As the result, the Gill One-Piece Piston Ring is one of great toughness, capable of laboring under terrific heat, speed and pressure without disintegrating—without losing its elasticity—its ability to form a snug, tight, oil-proof, fuel-proof contact with the cylinder walls.

**-facturing Company  
Illinois**

Canadian Manufacturers:  
BROWN ENGINEERING CORPORATION  
Toronto, Ontario

Identify the Gill One-Piece Piston Ring by the joint, but do not measure its merit by the joint alone.





# The LYCOMING MOTOR



## Why the Sales Manager Prefers the Guaranteed Lycoming

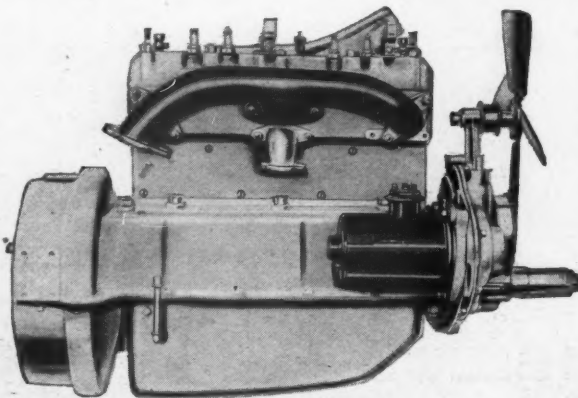
The Sales Manager is all-powerful in the selection of parts. His veto is fatal to any motor that he fails to approve. Because he is responsible for the sale of the factory output, his influence is great. Most Sales Managers desire their cars and trucks to be Lycoming-equipped. That is why one manufacturer after another is selecting this long-lived motor. That is also the reason why 75,000 Lycoming Motors will be produced in 1920.

The Sales Manager likes the Lycoming Motor because it adds to the salability of his truck. He knows that a Guaranteed Motor impresses buyers tremendously and increases profits through greater sales. Hence, his unqualified approval.

Your Sales Manager will probably voice these sentiments if you ask him. He realizes that the Guaranteed Lycoming will lessen sales resistance, thereby reducing selling costs. He knows that your dealers will be enthusiastic over its selection, because it gives them a decided advantage over competitors.

Every Lycoming Motor leaves our plant with a Guarantee attached to its manifold that is not removed until the ultimate purchaser opens the envelope. This Guarantee reads

in part: "In the event that your motor be defective and it can be shown that we are at fault, a new and perfect part or motor will be supplied in place of the one with imperfections." Isn't that the kind of a motor you want on your motor truck?



**Lycoming Motors  
Corporation**

Williamsport, Pa.

# The HUFFMAN TRUCK

**"Time and Tide  
Wait for No Man"**

You believe, of course, in the future prosperity of America—so you must realize that NOW is the opportune time to make your plans for a share in the big business which is in store for "The man with the Truck." Huffman Dealers have made money this year and will make more money next year.

*We'll Tell You Why if You'll Write Us*

#### GENERAL SPECIFICATIONS

MOTOR—Model B 4-cyl. Continental Red Seal.  
MOTOR—Model C 4-cyl. Buda.  
IGNITION—Eisemann High-Tension Magneto with Automatic Impulse Starter.  
CARBURETOR—Zenith.  
CLUTCH—Fuller, dry-disc type.  
TRANSMISSION—Fuller, Unit Power Plant Type.  
STEERING GEAR—Lavine Irreversible.  
FRAME—Hydraulic Pressed Steel Channel.  
FRONT AXLE—Drop Forging with Timken Bearings.  
REAR AXLE—Torbenzen Internal Gear or Standard Worm Drive.  
SPRINGS—Perfection; Special Design.  
TIRES—Firestone.  
WHEELBASE—140 inches.  
LOADING SPACE—10½ ft. from rear of seat to end of frame.  
CHASSIS WEIGHT—3200 lbs.

#### Huffman Brothers Motor Co.

*Makers of the Huffman Six*

Main Office and Factory:

ELKHART, IND.

Branch and Showroom: 2425 Michigan Ave., Chicago, Ill.

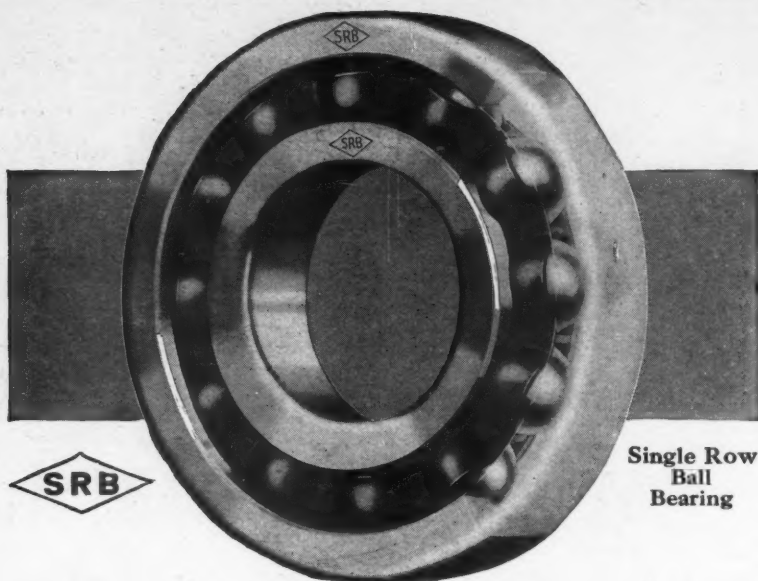
**CHASSIS  
PRICE  
\$1875**



**\$1875**  
With Internal Gear Drive

**\$2075**  
With Worm Drive





Single Row  
Ball  
Bearing

## A Saving of Millions Annually to Users of Machinery

**M**ILLIONS of dollars are wasted each year because of unnecessary power costs and rapid depreciation caused by undue friction in revolving mechanisms.

Manufacturers of all kinds of machinery are awakening to this fact and are following the lead of manufacturers of automobiles, trucks and tractors, in the successful development of which the installation of anti-friction bearings at all critical bearing points has played an essential part.

It is decidedly to the interest of those machinery manufacturers who have not as yet equipped their products with ball bearings to investigate the definite and important advantages in reducing power cost, speeding up production and improving quality of product assured by



Single Row

Double Row

### ANNULAR BALL BEARINGS

From the making of the High Chrome-High Carbon Steel used in all S.R.B. Bearings to the shipment of the finished product every operation is subject to the undivided control of one organization working toward a single ideal.

### STANDARD STEEL AND BEARINGS INCORPORATED

Philadelphia  
Standard Roller Bearing Co.

Plainville, Conn.

Norwich, Conn.

New Haven, Conn.

Pittsburgh

Braeburn, Steel Co.

Standard Sales and service Distributors in Principal Cities

Executive Offices: 347 MADISON AVENUE, NEW YORK CITY

Controlled and Operated by

**MARLIN-ROCKWELL**  
C O R P O R A T I O N

Nation-wide distribution of  
S. R. B. Bearings is provided  
through the following  
Branches and Distributors  
of

THE STANDARD SALES  
and SERVICE CO.

New York City 1926 B'way  
Philadelphia

50th St. & Lancaster Ave.

Boston—84 Brookline Ave.

Chicago

1806 So. Michigan Ave.

Cincinnati—915 Race St.

Cleveland—2062 Euclid Ave.

Detroit—936 Woodward Ave.

Indianapolis

646 N. Meridian St.

Kansas City—205 East 18th St.

Los Angeles

1522 So. Grand Ave.

Pittsburgh—3751 Bigelow Blvd.

St. Louis—3124 Locust St.

San Francisco—41 Spear St.

Seattle—601 East Pike St.

Des Moines—1015 Grand Ave.

Augusta, Ga.—607 Broad St.

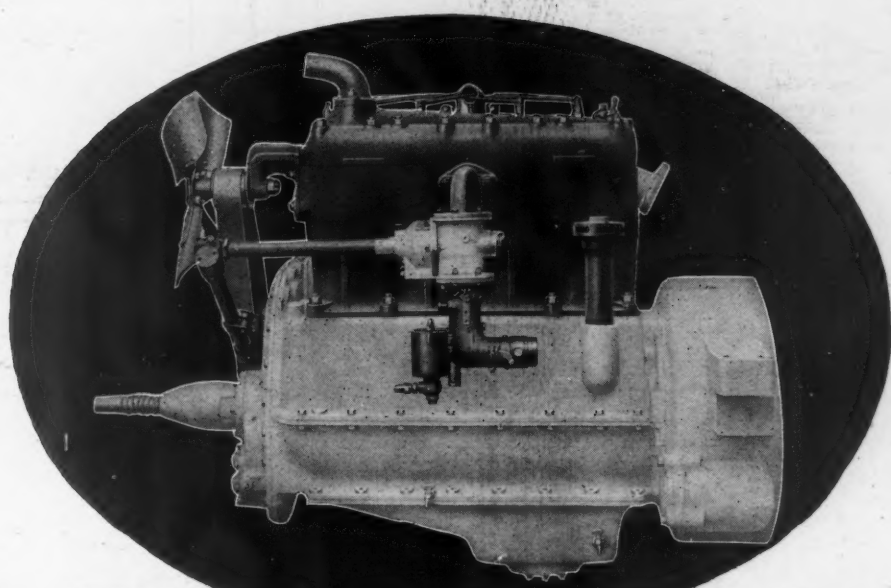
Dallas, Texas—2029 Main St.

Houston, Texas—1206 Main St.

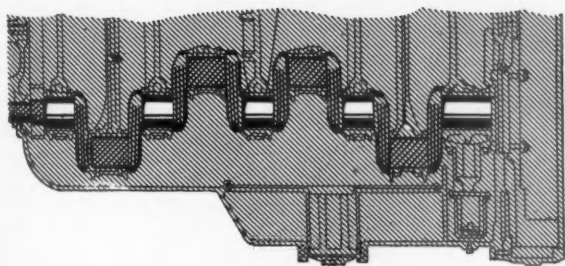
Birmingham, Ala.

406 So. 20th St.

Distributors of S. R. B. Bearings in  
over 200 other cities.



# HERCULES



## 5 Main Bearings—

—assure almost endless life of bearings by maintaining extremely low bearing pressures.

—eliminate the crank arm deflection and excessive vibration due to this deflection, thus reducing internal losses and increasing mechanical efficiency.

—permit a crankshaft design of minimum weight, yet maintaining maximum strength and rigidity.

The tremendous pressures of the exploding gases are absorbed by a main bearing equally spaced on each side of each crank pin and smoothly transformed into rotative effort.

## 110,000 H. P. Monthly For the Nation's Commerce

Every month the transportation strength of the country is increased 110,000 H. P. by the output of the Hercules institution. This tremendous power applied to trucks and tractors of various makes is doing its share in relieving the congested condition of traffic and increasing the production of our farms.

The gigantic strength represented by this production of more than a million H. P. a year is a lasting strength because of the longer life of Hercules Engines.

The first Hercules Engines built are still doing daily duty. In fact, the records of most of the first Hercules Engines show that they are still operating on the original set of bearings.

**The Hercules Motor Mfg. Company**  
Canton, Ohio

Sales Offices: Detroit  
San Francisco

Chicago  
London, England

Buffalo

# FOR TRUCKS AND TRACTORS



## Compare This Old "Available" With the "Availables" We're Building Today!

**BEN BUDYCH**  
MEAT MARKET  
1225 CORNELL STREET  
CHICAGO

May 13, 1920

Available Truck Company,  
North & Kilpatrick Aves.  
Chicago.

### MY LABOR DAY PURCHASE

Gentlemen:-

No. 363. Monday, September 2, 1913, Available Truck  
Truck from you, my thoughts on that day were whether or not  
it would fulfill the commission delegated for it in commemoration of the time.

Since then, and up to the present time, I have had many occasions to rejoice in the judgment I displayed on that day in the purchase of this Available Truck, as it has saved many hours in time through prompt delivery, economical in operation and its unfailing duty - it being available every day with the exception of a few moments for oiling, minor repairs or adjustments.

While my truck has only had the third set of tires, though having traveled a total of 157582 miles, I attribute that to the fact that I have never taken the easier route of travel by riding the street car rails in the city.

While I originally paid \$1400.00 for this truck you could not buy it today for the money, in fact, I have become attached to it, that we look upon it as a member of the family.

As a matter of fact, if I were to sell my business today, I would not sell the truck, considering it worth more than I could duplicate it for in a more modern truck, furthermore, its cost of operation is so small that I would hesitate before trading or exchanging it for any truck of present construction.

To my certain knowledge this truck has never been in your or any other shop for repairs.

I wish you every success in your business - You have built a good truck for me, and I feel that you are continuing to do so for others.

Very truly yours,

*Ben Budych*



7-Year-Old "Available" still in use

# Available Trucks

Manufactured in  
1½-Ton, 2½-Ton, 3½-Ton, 5-Ton and  
7-Ton Capacities

## AVAILABLE TRUCK COMPANY

North and Kilpatrick Avenues—F-2

CHICAGO, U. S. A.

# SCHWARZ WHEELS

WITH INTERLOCKED SPOKES

## 209,000 miles—10 years service

This "Available" truck, equipped with Schwarz Wheels, has been in service for ten years and in spite of the fact that it has traveled 209,000 miles, or more than eight times the circumference of the globe, the wheels are in perfect condition today.

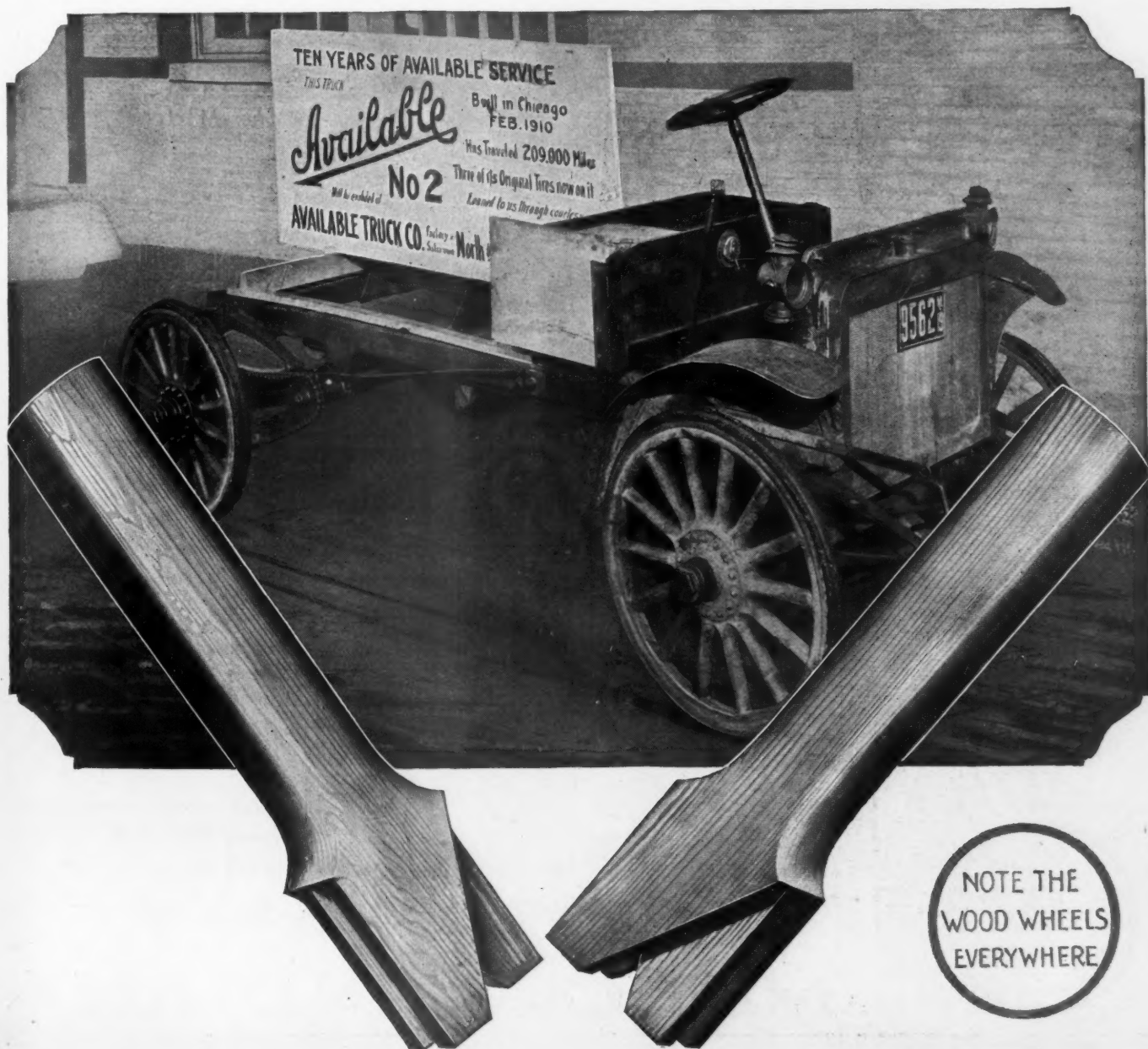
This unusual wheel performance is due to the

Schwarz interlocked spoke features. The spokes fit into each other at the hub and form an almost solid spider that is capable of withstanding severe radial loads and side-thrusts. In the laboratory tests of Schwarz Wheels, ten times their rated capacity is recorded.

### THE SCHWARZ WHEEL COMPANY

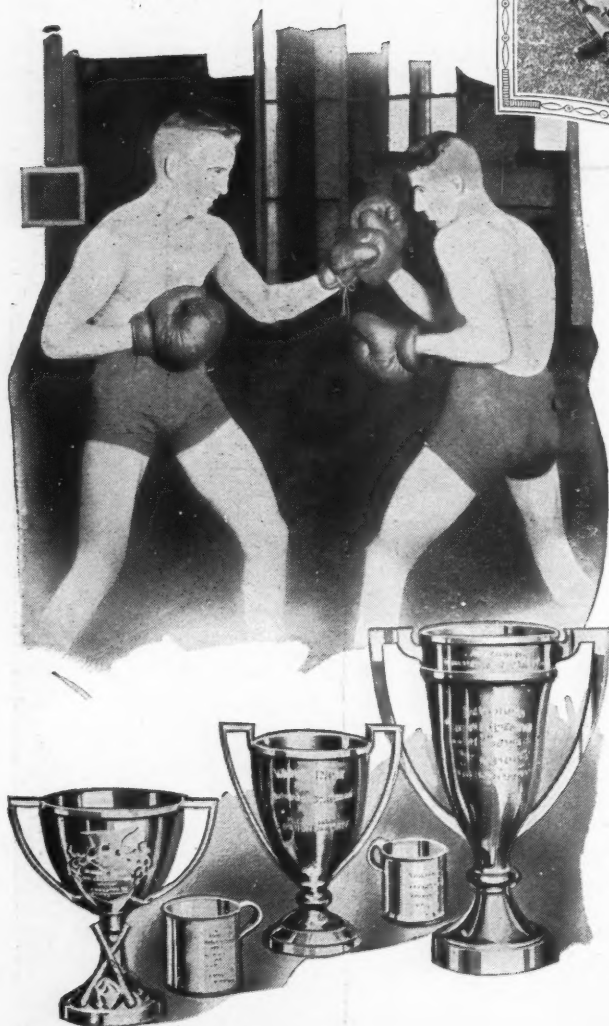
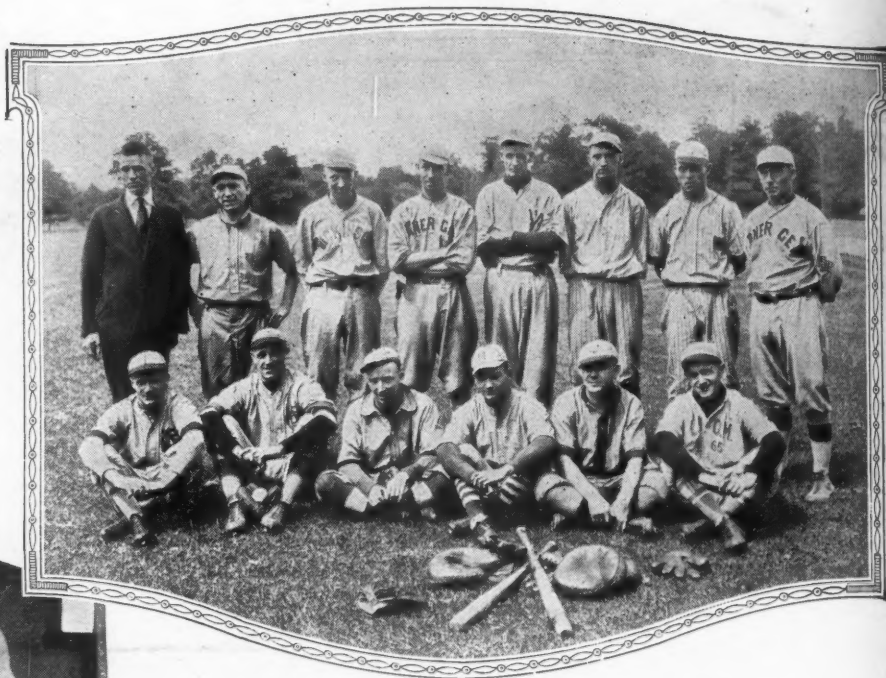
FRANKFORD

PHILADELPHIA





# Play-



## Adds Zest To Work

Life means more than hard work and profits. Besides making working conditions as fine as they can be made, special attention is given at Warner Gear to athletics.

Sports further good fellowship among our men—increase their physical fitness—promote their interest in this company and a pride of their association with it.

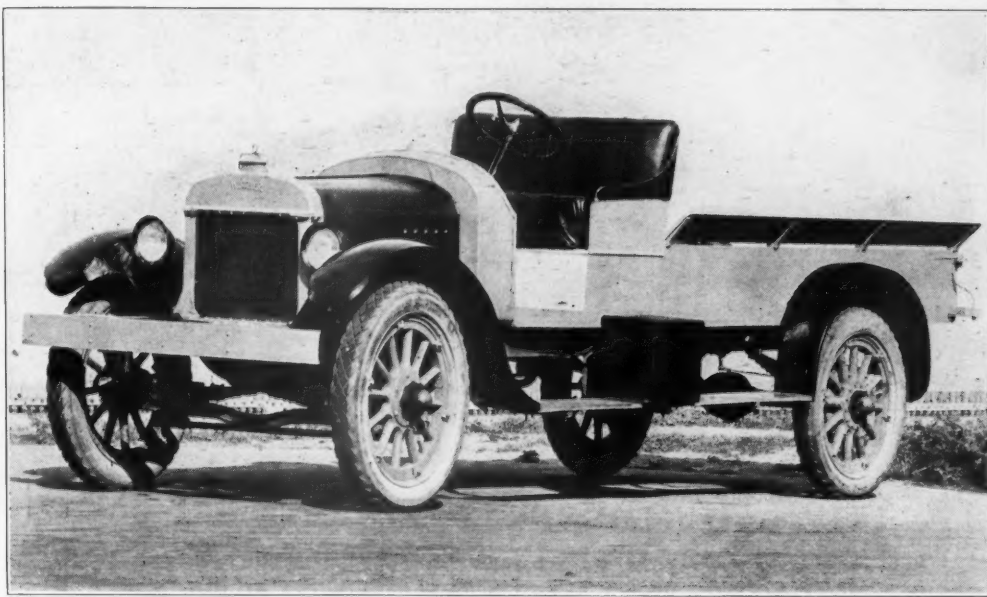
In athletics, as in workmanship, Warner Gear men excel.

# WARNER GEAR

## COMPANY

### MUNCIE INDIANA





## *"The Winther Delivery Special"*

In the "Winther Delivery Special" the discerning dealer can foresee tremendous possibilities.

*Electric lighting and starting; pneumatic cord tires; speedometer, bumper, and Alemite lubricating system are included in the "Delivery Special" chassis price*

**\$1795**

He can visualize its ready market with the merchant, the grocer, the laundry company, the farmer, etc., because the "Delivery Special" possesses sturdiness, speed and operating economy to an exceptional degree.

He can appreciate, moreover, the completeness of the Winther line, which also includes 1½, 2, 3½, 5 and 7 ton models in the rear drive type, and 1½ and 2½ ton four-wheel drives.

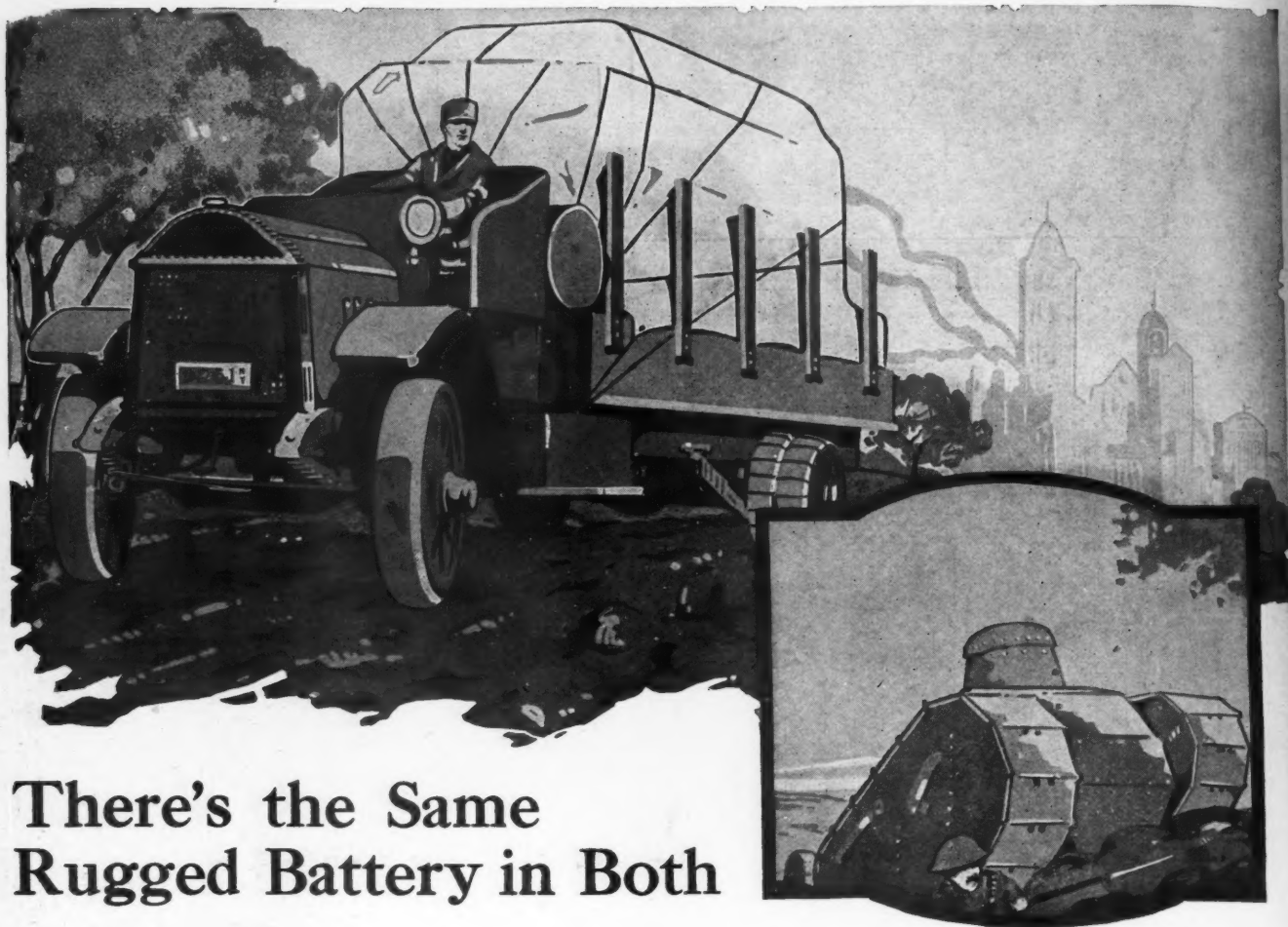
The far-sighted dealer, in fact, will be interested in having complete details on the Winther contract—information that we will gladly supply on request.

# WINTER MOTOR TRUCK COMPANY

*Manufacturers of Motor Trucks and Motor Cars*

**KENOSHA, WISCONSIN**





## There's the Same Rugged Battery in Both

Terrific as is the vibration on a solid-tired motor truck, it can scarcely be compared to the jolting and jarring of Uncle Sam's Army Tanks in action. Yet this is the service for which

# The "Exide" Truck Battery

was designed and built.

No ordinary battery can withstand the brutal treatment that these batteries are capable of enduring. Only the skill acquired by 32 years of battery building experience made their construction possible.

And now these batteries are rendering starting and lighting service on motor trucks where no other battery has ever been able to stand up before.

Write for particulars about this extraordinary battery. Learn about its extreme ruggedness, its power and its assembly in the famous "Giant" Jars.

## THE ELECTRIC STORAGE BATTERY CO.

Oldest and largest manufacturers in the world of Storage Batteries for every purpose

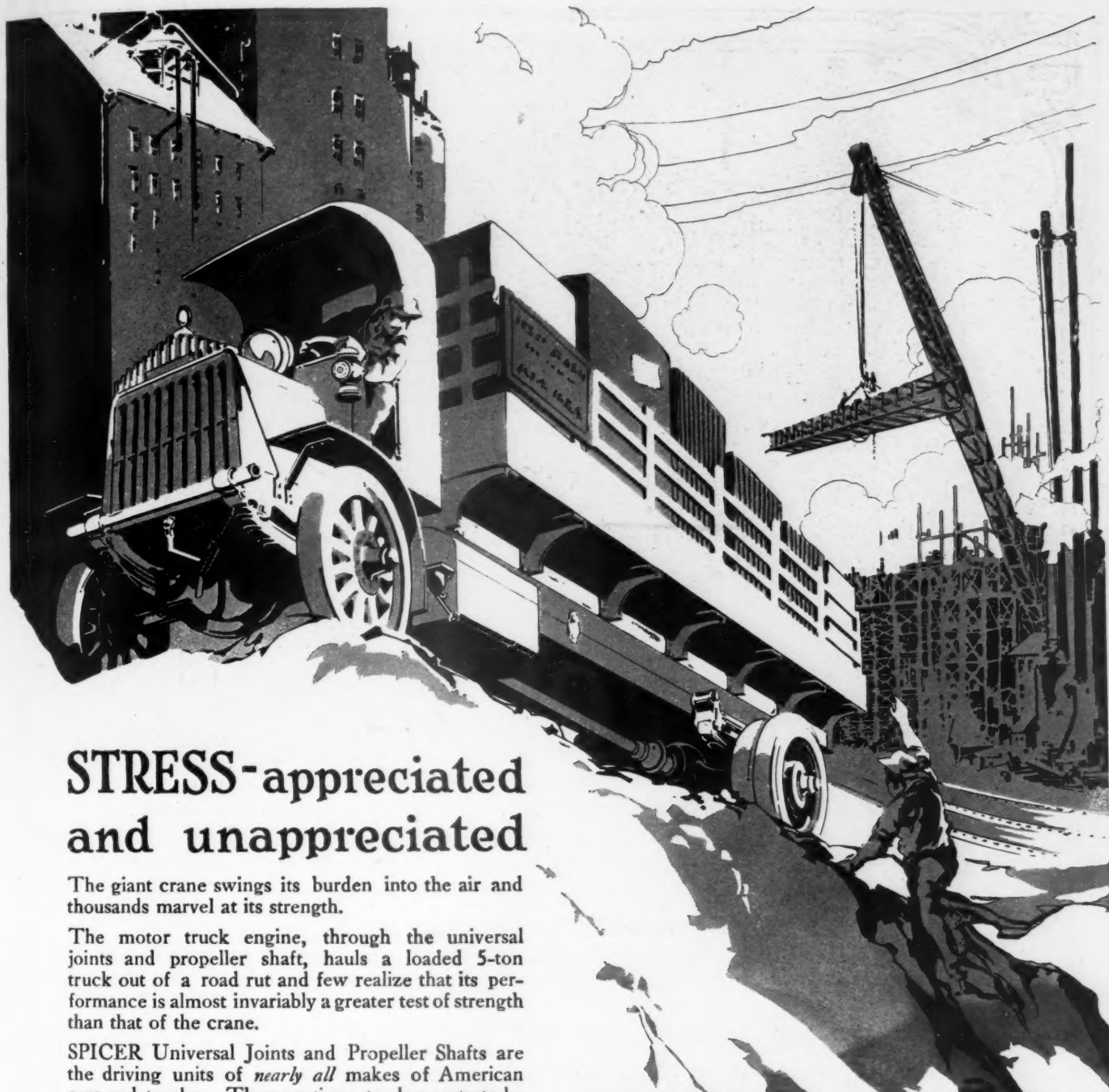
1888

PHILADELPHIA

1920

Branches in seventeen cities

Special Canadian Representatives: Chas. E. Goad Engineering Co., Limited, Toronto and Montreal



## STRESS-appreciated and unappreciated

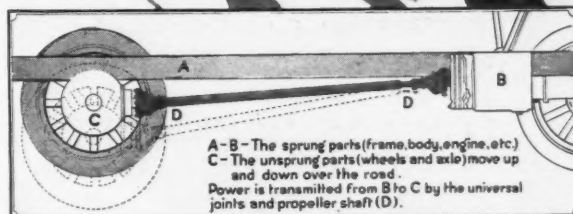
The giant crane swings its burden into the air and thousands marvel at its strength.

The motor truck engine, through the universal joints and propeller shaft, hauls a loaded 5-ton truck out of a road rut and few realize that its performance is almost invariably a greater test of strength than that of the crane.

SPICER Universal Joints and Propeller Shafts are the driving units of *nearly all* makes of American cars and trucks. They continue to demonstrate by their consistent daily performances, the soundness of the policy of concentration on the production of this one vital part.

SPICER MANUFACTURING CORPORATION  
SOUTH PLAINFIELD, NEW JERSEY

*Write on your business letterhead for illustrated booklet covering Spicer Universal Joints and Propeller Shafts*



# Spicer

UNIVERSAL JOINTS AND PROPELLER SHAFTS





*Cooling Systems embodying Long Spiral Tubing were adopted as standard for War Trucks—they are equal, as well, to all peace time requirements*

**T**HE system of automotive radiation that is recognized as *paramount—supreme*—in its vast field; the system that eliminates the hazards, the disappointments, the failures, by placing at the command of the producer, the skilled, experienced, *specialized services of engineers* who study the requirements of every motor for every purpose. A record of 18 years of unequalled accomplishments is assurance of valuable co-operation.

*No engine can be more efficient than its cooling system.*

Look to it then that your motor be permitted to realize its maximum of efficiency through the aid of a cooling system engineered to suit its requirements.

**LONG MANUFACTURING CO., DETROIT, MICHIGAN**

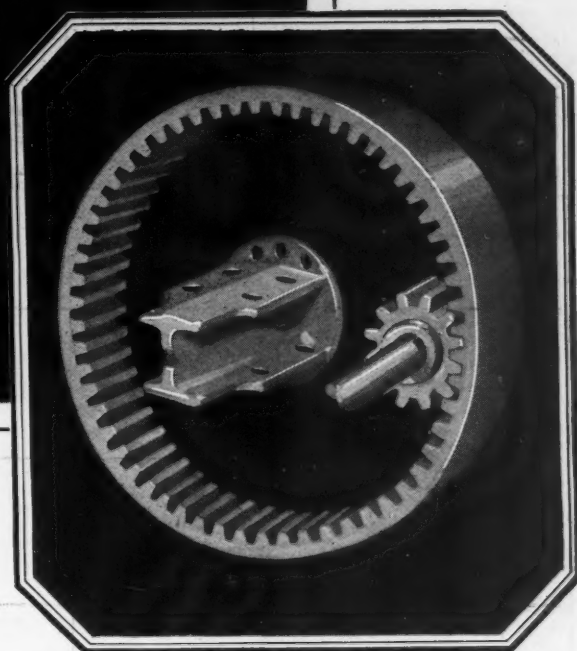
*Pioneer Makers of Cooling Systems for Gasoline Engines*

**LONG**  
**COOLING SYSTEMS**

*The Recognized Standard for Tractor, Trucks and Motor Cars.*



*The light weight of the Torbensen Axle, with its I-beam construction, is only one of the features which make it particularly adaptable to the speed wagon. This lightness means still greater economy of tires, gasoline and oil. An unusually high road clearance is of great advantage in farm work and on poor roads.*



*The internal gears and their pinions make the final gear reductions at the driving wheels, and deliver a much higher percentage of driving power.*

# TORBENSEN AXLES

CLEVELAND, OHIO





The nine International sizes range from  $\frac{3}{4}$  ton to  $3\frac{1}{2}$  tons, with bodies for all purposes

## Conquer the Great Rural Motor Truck Market Help the Farmer Replace Snail-pace Hauling With the International Motor Truck —Trusted in Town and Country Alike

**G**OVERNMENT statistics show that in 1918 alone, 350,000,000 tons of farm produce were transported locally to shipping centers in motor trucks. Each year these figures are increasing at a rapid rate. National official figures prove also that American farmers are the greatest users of motor trucks among all industries. No progressive motor truck distributor can afford to overlook impressive *facts* like those.

**International Motor Trucks** sell with a minimum of effort. Like all International products, they have built an enviable reputation on four generations of satisfaction. Today

Internationals are among the few leaders in total motor truck sales. Many thousands of them are at work on city pavements working in every line of industry, and thousands more are doing miscellaneous farm hauling.

**International Motor Trucks** are now made in nine sizes, ranging from  $\frac{3}{4}$  ton to  $3\frac{1}{2}$  tons, and bodies are available for all purposes. Dealers now selling these popular trucks and who are still able to make truck selling arrangements with this company have before them an opportunity of special note. Write the address below for facts in regard to International service, dealer terms, territory, etc.

### INTERNATIONAL HARVESTER COMPANY

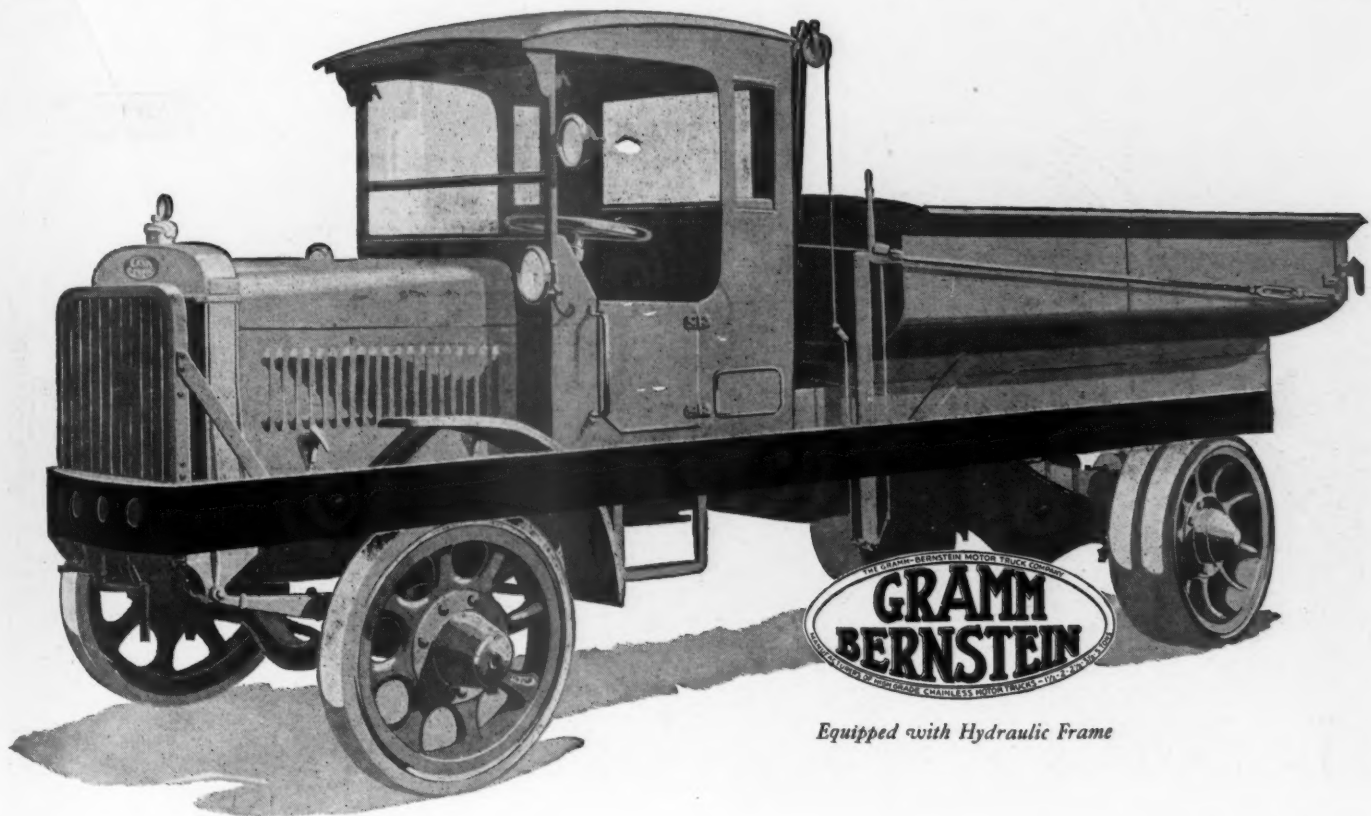
of America

CHICAGO

(Incorporated)

U S A

92 Branch Houses in the United States



## Character

The Character imparted by the spirit of willing men makes of an Hydraulic Frame *more* than a structure of common-place steel; *more* than a job which must be done.

The *standards* of workmanship applied by conscientious Hydraulic men have always been uncommonly high, so it is inevitable they should find reflection in the calm, satisfied acceptance of Hydraulic Frames wherever Truck specifications are discussed.

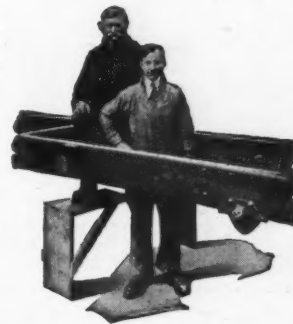
### Manufacturers of

Pressed Steel Frames for Passenger Cars, Trucks and Tractors; Axle Housings; Brake Drums; Torque Arms; Running Boards; Step Hangers; Hub Flanges; Discs; Dust Shields; Steel Barrels; Aeroplane and Miscellaneous Stampings.

THE HYDRAULIC PRESSED STEEL COMPANY  
of THE HYDRAULIC STEEL COMPANY  
CLEVELAND, OHIO

### Branch Sales Offices:

New York	Chicago	Detroit	San Francisco
Singer Building	Fisher Building	Book Building	Hearst Building



**"MORE  
Than a Place to Work"**

"In the Hydraulic plan of organization, each individual is dependent upon the other for results and each shares with the other in the reward of accomplishment. We are, therefore, interested in helping the other fellow get the knowledge which will make him useful, in the thinking which will give him vision and inspiration, and in the actual doing of his part."



# HYDRAULIC

## PRESSED STEEL COMPANY





An **Efemco**  
Product

## **Efemco** PISTON RINGS FIT

**Efemco** Piston Rings are finished to micro-metric limits and made to fit the contour of and press against the cylinder walls with uniform tension.

A properly-fitted piston ring is of vital importance to satisfactory engine operation.

**Efemco** Piston Rings reduce bills for engine repairs and upkeep. They are individually cast in our own foundry, and each lot tested for proper hardness.

Back of every Efemco product stands the 85 years' foundry practice of the makers.

*Department 3*

**FOSTER, MERRIAM & CO.,** MERIDEN,  
Conn., U.S.A.

**Efemco**  
PRODUCTS

Automobile Accessories  
Ball Bearing Casters  
Roller Bearing Casters

Piston Rings  
Furniture Trimmings  
Grip Neck Casters

Truck Casters  
Cast Aluminum Ware  
Grey Iron Castings



Standardized by  
[85 years of service]

Efemco Products

Efemco Products

Efemco Products

Efemco Products

Efemco Products

Efemco Products

Efemco Products

Efemco Products



**GUARANTEE**

*We guarantee to return springs to  
work with reduced the time  
of less 746 days less  
and*

## The HARVEY GUARANTEED SPRING — The Spring with an Insurance Policy

**W**HEN you prepare to take out life insurance an examining physician thumps and sounds you thoroughly, and if you are healthy you are given a policy.

We are so confident of the soundness, strength and quality of the Harvey Spring that we offer an insurance policy of another kind to every purchaser of a Harvey Boltless Spring. This is the Harvey guarantee—broad and unconditional.

This guarantee insures the strength and resilience of the Harvey. It also insures you, the dealer, against worry and trouble such as result from selling a spring the makers of which cannot guarantee.

The Harvey Boltless Spring is practically unbreakable and non-sagging. The emergency that causes the car owner with ordinary springs to bring his car home with a broken spring is nothing but a cushioned jolt for the Harvey Spring.

This remarkable strength and resilience is obtained by manufacturing standards of the highest order of which the patented Harvey process of heat-treating and tempering and rigid factory tests are features.

You can sell the Harvey Spring, firm in the knowledge that you are making a sale that will create customer satisfaction and resultant business increases.

Send for the Harvey Book of specifications for more than 1500 kinds of springs. We will also tell you of our selling aids for dealers.

**Harvey Spring & Forging Co.**

1059 Seventeenth Street

RACINE, WIS.

**Harvey**  
**RACINE**

BOLTLESS  
AUTOMOBILE

**SPRINGS**

Easy Riding — Guaranteed





**The Demand for This Fair Priced and Dependable Truck Increases.  
Enlarged Factory Space Enables Us to Keep Pace With the Demand.**

**Immediate Action Suggested for a Few Exclusive Franchise Territories Still Open**

### **2 Ton Model:**

**All Pneumatics: Front 34 x 5,  
Rear 38 x 7..... \$2550**  
**All Solids: Front 34 x 4,  
Rear 36 x 6..... \$2350**

**F. O. B. Factory**

*Motor: Buda 4 cylinder, 3 $\frac{3}{4}$  x 5 $\frac{1}{8}$ , 30 H. P. Ignition: Berling Magneto, high-tension, water-proof. Drive: Spicer. Carburetor: Zenith Automatic. Clutch and Transmission: Fuller. Rear Axle: Russel Internal Gear. Equipment Includes: Pierce Governor, Whistle, Power Driven Tire Pump, Impulse Starter, etc.*

On request we'll send detailed specifications

**With Every Keystone Truck and Franchise Goes Factory, Sales and Service Co-operation. We Stand Back of Every Truck We Sell.**

## **Keystone Motor Truck Corporation**

**Sales Office and Showroom: Forty-second and Chestnut Sts.**

**Factories: Oaks, Penna.**

**PHILADELPHIA, PENNA.**



Judged by Any Standard, the Trailer Line  
That Offers Dealers Greatest Opportunity is

# Byron

**MATERIALS** and **WORKMANSHIP**: The best obtainable, regardless of price. Quality construction is a BYRON watchword. **EXCLUSIVE FEATURES**: No trailer on the market can offer advantages to compare with the BYRON "Five Points of Superiority." These are exclusive, patented BYRON construction, and are the secret of the BYRON TRAILER'S extraordinary efficiency and usefulness. (Write for descriptive literature.) **SERVICE** and **PERFORMANCE**: Another enormous BYRON selling advantage, safeguarded by the BYRON manufacturing policy. BYRON TRAILERS give complete and lasting satisfaction. **SELLING EFFORT**: BYRON TRAILERS practically sell themselves. Each BYRON TRAILER in service is an open avenue leading to additional sales. **PROFIT**: Highly satisfactory, due to the unusual BYRON merchandising plan. BYRON TRAILERS compete successfully with any high-grade trailer, at prices that allow the dealer a very liberal margin of profit.

*TO MOTOR TRUCK DEALERS: We have excellent territory still open. Write for our proposition. Sell BYRON TRAILERS in this great "truck and trailer" year*

The BYRON ENGINEERING WORKS  
INCORPORATED

General Offices and Factory

Louisville

Kentucky



The Fabrikoid process  
adds beauty and long life to fabrics;  
some heavy and rugged, others dainty  
as linen — all pliable, scuff-proof,  
stain-proof and water-proof.

**DU PONT  
FABRIKOID**



—grease cannot harm it

**F**ABRIKOID is an upholstery material which  
always remains good looking *in spite of*  
careless employees.

They can let it be wet with rain—it will not  
grow soggy. The hottest sun will not fade it.  
*Even grease will not stain it.* It washes  
off with soap and water.

Fabrikoid is scuff-proof and will not crack or  
peel. It is a distinctly economical upholstery  
material, first and last.

Send for samples and complete information.

**DU PONT FABRIKOID CO.**

WILMINGTON, DELAWARE

**Branch Offices:**

21 E. 40th Street . . .	New York City
Dime Bank Building . . .	Detroit, Mich.
Gugle Building . . .	Columbus, Ohio
McCormick Building . . .	Chicago, Ill.
Merchants Bank Building . . .	Indianapolis, Ind.
Harvey Building . . .	Boston, Mass.
Chronicle Building . . .	San Francisco, Cal.

**Plant:** Newburgh, N. Y.

**F A B R I K O I D**

# FAGEOL

## COMPOUND TRUCKS



**91%  
more  
pulling  
power**

*{ It's in the  
Gear Box }*

**36%  
more  
road  
speed**

**T**HE motor truck of the future must have a wider range of power and speed. And this must be combined with greater economy of operation. Every truck dealer realizes this.

The Fageol—the truck with the compound transmission (patents pending)—actually develops 91 per cent more pulling power and 36 per cent more road speed without increasing its engine speed.

For three years this great truck has been built in Oakland, California. It is one of the three or four big leaders in the trucking field west of the Rockies. It is now also being built in Cleveland, to give truck buyers of the East and Middle West the vital advantages that have proved so successful and so popular on the Pacific Coast.

*Two Models—Medium  
and Heavy Duty*

*Built by the*

**FAGEOL MOTORS COMPANY [OF OHIO], CLEVELAND, O.**

**FAGEOL MOTORS COMPANY.**

**OAKLAND, CAL.**



# 91% MORE

# PULLING POWER



Fageol Trucks were developed to meet the most exacting traffic conditions found in America.

On the Pacific Coast, a successful motor truck must be able to haul a full load up 25 to 30 per cent grades over all kinds of mountain roads. It must be capable of withstanding the rapid transition from summer heat to a freezing temperature.

To compensate for lowered efficiency due to high altitudes—25% at 7000 feet—it must have a reserve of power far beyond sea-level requirements.

These are the conditions under which Fageol Trucks won their reputation.



Oil Reservoir Spring Hanger  
which keeps springs lubricated, minimizes road shock and lessens depreciation.

# FAGEOL

FAGEOL MOTORS COMPANY [OF OHIO]

# 36% MORE ROAD SPEED



The Fageol *compound transmission* (patents pending)—used exclusively in Fageol Trucks—was designed to provide the extra power and speed required,

This unit has no more gears than an ordinary 4-speed transmission, yet it permits a far wider range of power and speed without in the least increasing the engine speed.

It actually gives the truck 91% more pulling power and 36% more road speed,

*—and greatly decreased gasoline consumption.*

*Two Models—Medium and Heavy Duty.*

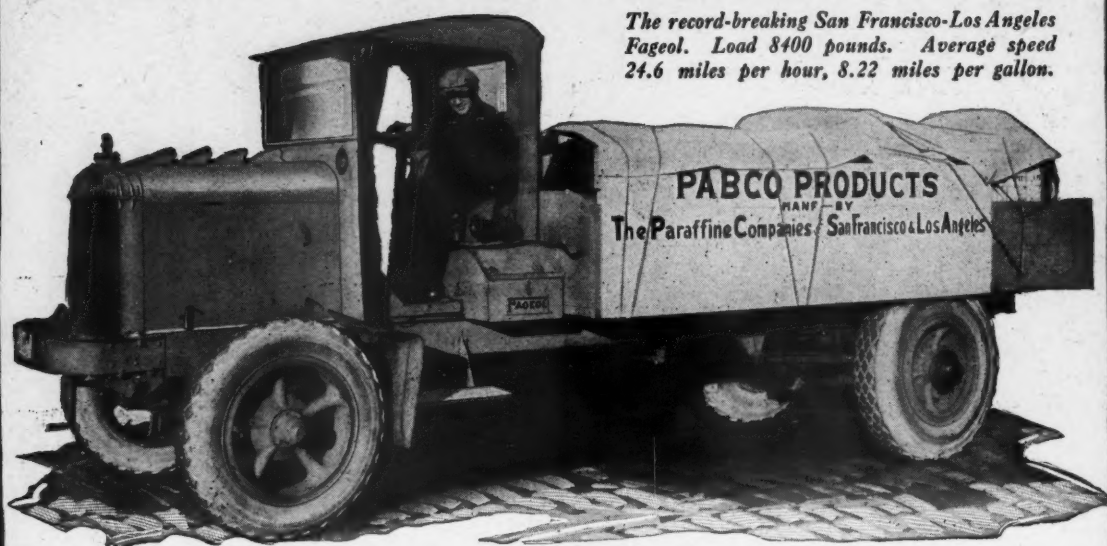


Compound Seven-Speed Control Lever and Fageol Foot Throttle.

# COMPOUND TRUCKS

CLEVELAND, OHIO





*The record-breaking San Francisco-Los Angeles  
Fageol. Load 8400 pounds. Average speed  
24.6 miles per hour, 8.22 miles per gallon.*

## Now Ready for Good Dealers

An unapproached range of power and speed, together with unusually low gasoline consumption, gives the Fageol tremendous selling advantages. In addition, this great truck also embodies ease of control and comfort for the driver as well as low upkeep costs for the owner.

The Fageol is built to conquer transportation difficulties. And that is exactly what it does.

It will be marketed through a limited number of high-class dealers. Your territory may still be open.

**FAGEOL MOTORS COMPANY [OF OHIO], CLEVELAND, O.**  
FAGEOL MOTORS COMPANY, OAKLAND, CAL.

# FAGEOL

## COMPOUND TRUCKS



## Who is Going to Get the Trailer Business in Your Territory?

You know it is there to get. You know that every time you drive into the country you see more trailers than you ever saw before. You know that you see more trailers coming into use on city streets every day.

But do you know that the trailer business today compares with the trailer business of the next few years like an acorn compares with an oak? Do you know that the demand for trailers is increasing more than 100% faster than the demand for trucks.

We don't ask you to take our word for these facts. Investigate for yourself. Look over the field. Make a few inquiries among your friends who own or operate motor trucks. If they don't know the facts about trailer hauling, simply tell them

an Ohio Trailer doubles the capacity of any truck. Tell them the operating expense is practically the same whether a trailer is used with a truck or not.

Then think of the market for Ohio Two-Wheel Automobile Trailers. Think of the hundreds of farmers, stockmen, plumbers, painters, paper hangers, merchants in every line of business who need a two-wheel trailer to haul any load up to one ton, behind any make of touring car or truck.

Somebody is going to get the trailer business in your territory. Somebody is going to make mighty fine profits handling Ohio Trailers this year, bigger profits next year and all the years to come.

The opportunity is yours today. It may be gone tomorrow. Territory is being taken fast. Write or wire for Ohio Trailer Dealer's proposition today. Quick action is needed.

**The Ohio Motor Vehicle Company**  
Nottingham Road, Cleveland, Ohio

**MAIL THIS NOW**  
THE OHIO MOTOR VEHICLE COMPANY, Cleveland, Ohio  
Send full details of your..... distributor's  
or..... dealer's proposition.  
Name.....  
Address.....



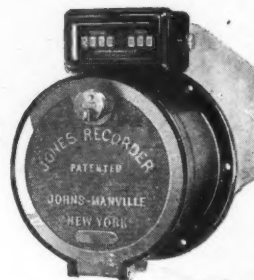


HEREVER you are located you can get these dependable Johns-Manville products, for trucks and commercial cars. Read about them.



#### *Johns-Manville Non-Burn Asbestos Brake Lining*

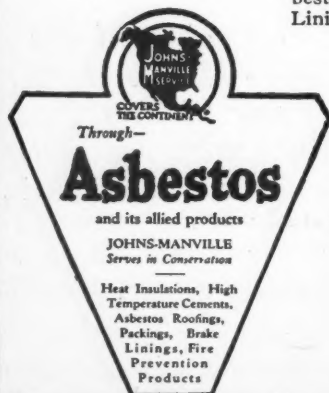
Non-Burn is the representative of Johns-Manville Asbestos to the owners of Trucks and Commercial Cars. That's one reason why it is so dependable. Brakes last longer with Johns-Manville Asbestos Brake Lining.



#### *The Jones Recorder*

On a chart of sensitized paper, which cannot be tampered with, this instrument records a complete, accurate and permanent history of the performance of your cars, every minute of the day. In addition, the Jones Recorder shows the total mileage up to 9,999 with trip mileage up to 99.9.

Tell truck owners to put this instrument on their cars and learn the truth.



# JOHNS— AUTOMOTIVE



**Johns-Manville  
"Noark"  
Automobile  
Lighting Fuses**

You can back these fuses as absolute safe-guards for your customers' batteries. The name "Noark" means split-second accuracy.



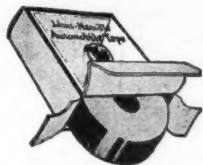
**Johns-Manville  
Automotive Mogul  
Packing**

For water pumps and similar places, where a small twisted or braided packing is required, Mogul Packing makes a tight job. Besides stopping the leaks, it is a natural lubricant. Keep Mogul Packing on hand, there are lots of uses for it.



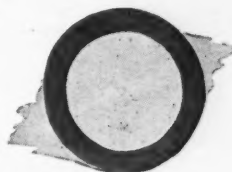
**Johns-Manville  
Hub Odometer**

There is an increasing demand for an accurate but inexpensive mileage recorder that can be attached to business cars and trucks. This instrument will enable you to meet the demand — at an excellent profit.



**Johns-Manville  
Automotive  
Tape**

Here's a tape so good that we guarantee it. Johns-Manville Tape will make satisfied customers for you.



**Johns-Manville  
Non-Burn  
Clutch Facing**

When you install Non-Burn clutch facings, you get the same quality, wear-resistance and gripping power that have made Johns-Manville Non-Burn Brake Lining famous.

**JOHNS-MANVILLE COMPANY**

Madison Avenue at 41st Street, New York City

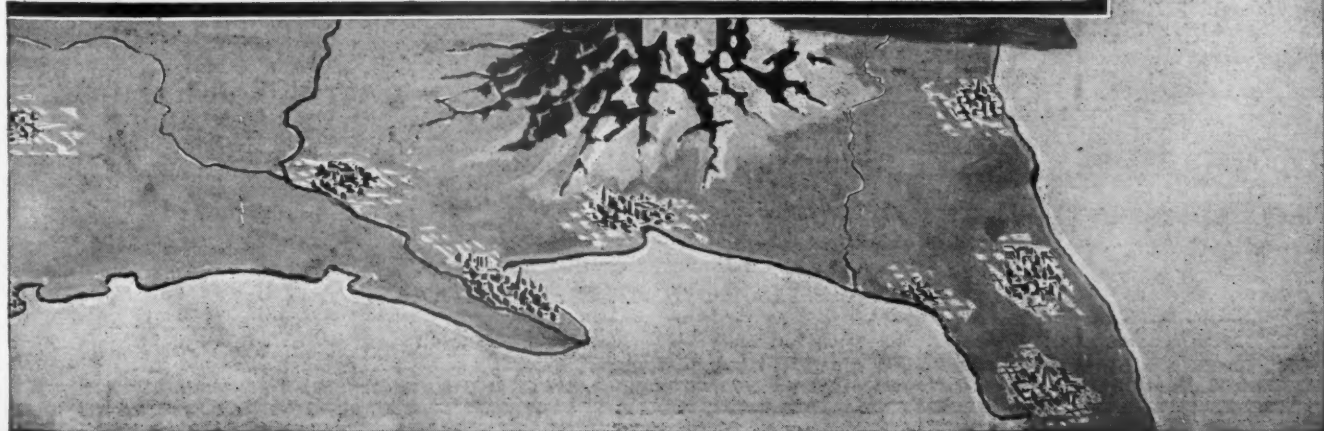
10 Factories—Branches in 64 Large Cities

For Canada:

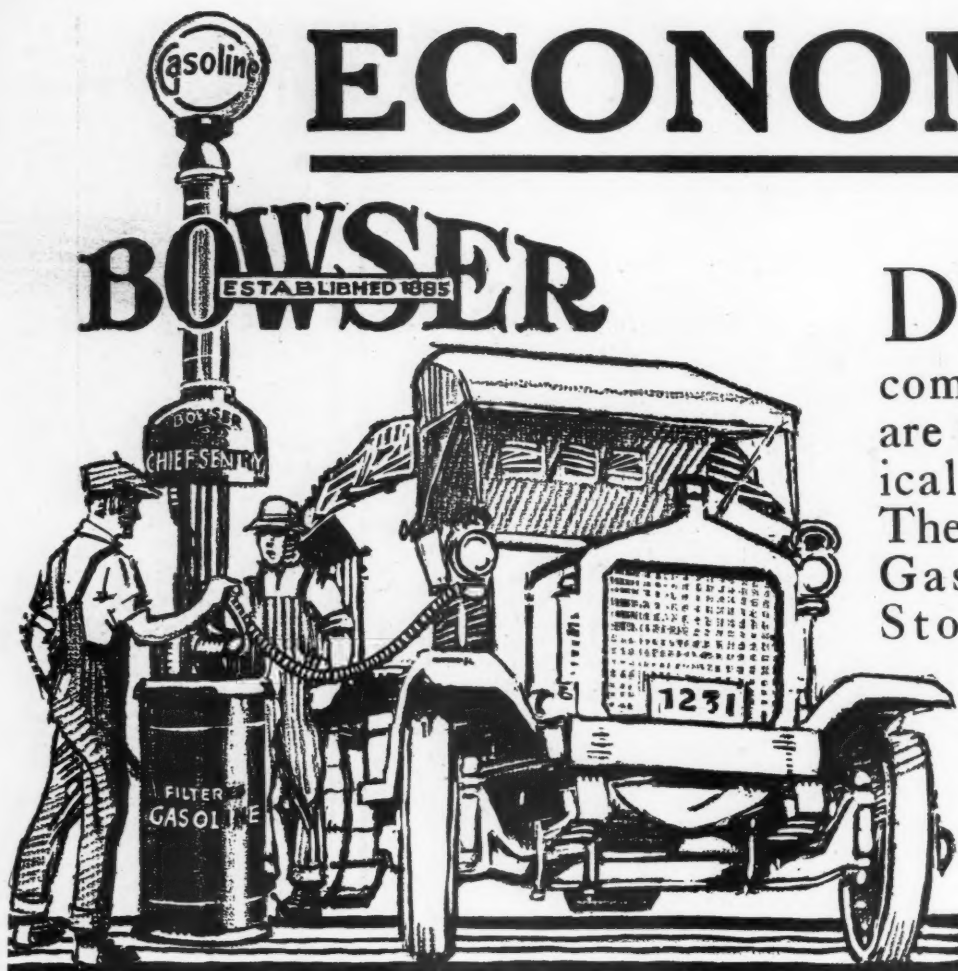
CANADIAN JOHNS-MANVILLE CO., Ltd., Toronto

# MANVILLE

## EQUIPMENT







# ECONOMY!

**D**ISTRIBUTORS and users of commercial vehicles are talking "Economical Transportation." The use of BOWSER Gasoline and Oil Storage Systems eliminates evaporation and increases the mileage per gallon from gasoline and oil.

## GASOLINE

Let us presume that 1,000 gallons of gasoline should operate a  $3\frac{1}{2}$  ton truck for 10,000 miles.

Careless storage will easily cause the evaporation of 25% of this volume—this means the loss of the mileage from 250 gallons of gasoline and reduces the mileage obtainable from the residue. The entrance of foreign matter through inferior storage causes still further loss of power.

## LUBRICATING OIL

60 gallons of oil should reasonably lubricate a  $3\frac{1}{2}$  ton truck for 10,000 miles. A poor system of oil storage and supply inevitably permits the entrance of dust and grit.

A Bowser System will reduce motor wear by preventing the entry of foreign matter into the lubricating oil.

When there is a BOWSER SYSTEM to fit every need, why experiment? BOWSER represents the full measure of satisfaction.

All information given cheerfully.

**S. F. BOWSER & CO., Inc., Fort Wayne, Ind., U. S. A.**

BRANCH OFFICES IN 21 CITIES OF UNITED STATES

Canadian Office and Works: TORONTO, ONTARIO, CAN.

LONDON, ENGLAND:  
22 Victoria St., S. W. 1.

PARIS, FRANCE:  
5 Rue Denis-Poisson

HAVANA, CUBA:  
Lonja del Comercio 427

SYDNEY, AUSTRALIA:  
6 Castlereagh St.

## NASH TRUCKS *Serve Westinghouse*



*The Westinghouse Lamp Company of Milwaukee has operated a Nash truck over a long period of time and has found it unusually dependable and economical in service. This nationally known concern is just as pleased with its Nash equipment today as it was upon the date of purchase.*

### Comparison Reveals Excellence of Nash Truck Construction

COMPARISON of Nash Trucks, unit by unit, makes their unusual quality at once apparent and explains why they are considered such sound hauling investments by their owners.

In excellence of materials and workmanship, correctness of design and high character of performance in owner use, Nash trucks offer exceptional values.

And the continued good performance of every Nash truck is assured by the nation-wide organization of Nash distributors and dealers carrying out Nash service policies and ready to give prompt and efficient assistance to Nash owners wherever occasion may require.

*Nash Trucks: One-Ton Chassis, Two-Ton Chassis, Nash Quad Chassis*

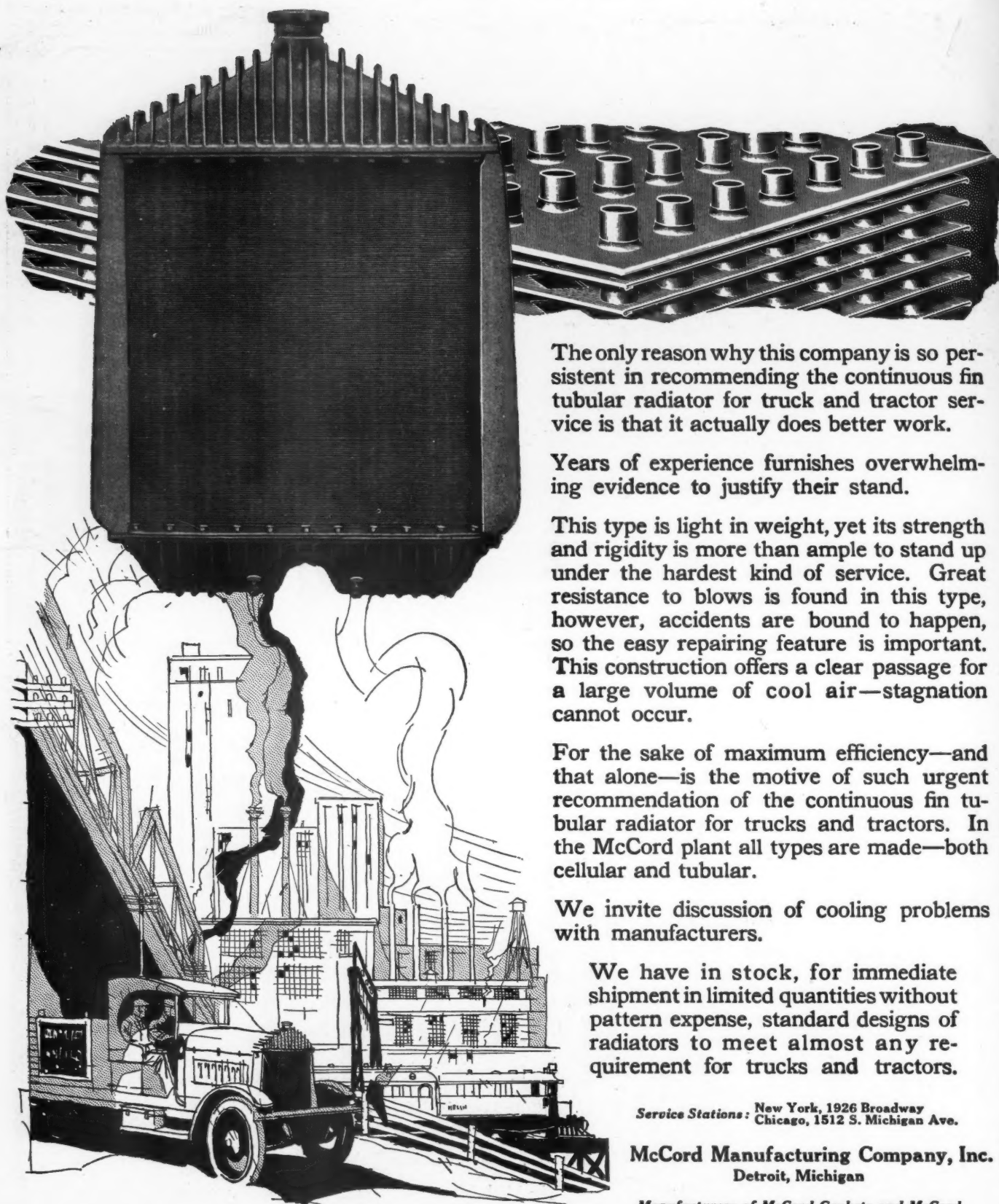
**The Nash Motors Company, Kenosha, Wisconsin**

*Manufacturers of Passenger Cars and Trucks, Including the Famous Nash Quad*

Nash Motor Sales Limited, Toronto, Ont., Distributors of Nash Cars and Trucks for the Dominion of Canada

# NASH MOTORS





The only reason why this company is so persistent in recommending the continuous fin tubular radiator for truck and tractor service is that it actually does better work.

Years of experience furnishes overwhelming evidence to justify their stand.

This type is light in weight, yet its strength and rigidity is more than ample to stand up under the hardest kind of service. Great resistance to blows is found in this type, however, accidents are bound to happen, so the easy repairing feature is important. This construction offers a clear passage for a large volume of cool air—stagnation cannot occur.

For the sake of maximum efficiency—and that alone—is the motive of such urgent recommendation of the continuous fin tubular radiator for trucks and tractors. In the McCord plant all types are made—both cellular and tubular.

We invite discussion of cooling problems with manufacturers.

We have in stock, for immediate shipment in limited quantities without pattern expense, standard designs of radiators to meet almost any requirement for trucks and tractors.

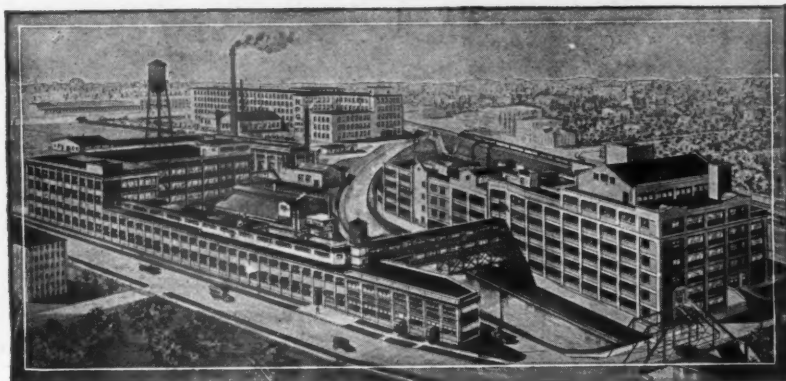
*Service Stations:* New York, 1926 Broadway  
Chicago, 1512 S. Michigan Ave.

**McCord Manufacturing Company, Inc.**  
Detroit, Michigan

*Manufacturers of McCord Gaskets and McCord  
Force-Feed Lubricators*

# MCCORD

## RADIATORS



*The ten-acre plant of the New Process Gear Corporation*

## Gears That Save You Money

We have made gears in large quantities to many specifications. Therefore, you may find that a slight change here and there in the gear dimensions for your car, truck or tractor, will let you take advantage of gear production for which we are completely tooled.

Our engineers are ready to confer with you.

New Process Gears are absolutely interchangeable so you can make top speed in assembling.

*Quality — Quantity — Quickness*

**New Process Gear Corporation**

Syracuse

Member of the

New York



*New Process Gears*



# PIERCE-ARROW

## 2-ton, 3½-ton, 5-ton Dual Valve Trucks

with *double* ignition and *electric* lights

Dual Valves mark as notable an advance as the Worm Gear, introduced in 1910 by Pierce-Arrow, and now the dominant truck drive. They mean greatly increased power and surprising operating economy.

The present line *retains* these distinctive Pierce-Arrow characteristics—durability, long life, easy operation. It *gains materially* in these vitally important attributes:

Pulling Power—equal to any demand

Gasoline Economy—more miles per gallon

Accessibility—for quick economical repairs

# Pierce Arrow

48 of the FIRST FIFTY  
trucks still running  
after 9 years' service.



Delivers more work in a  
given time.

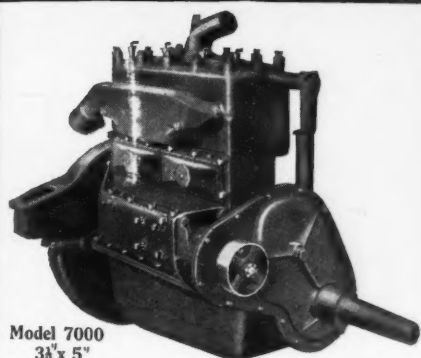
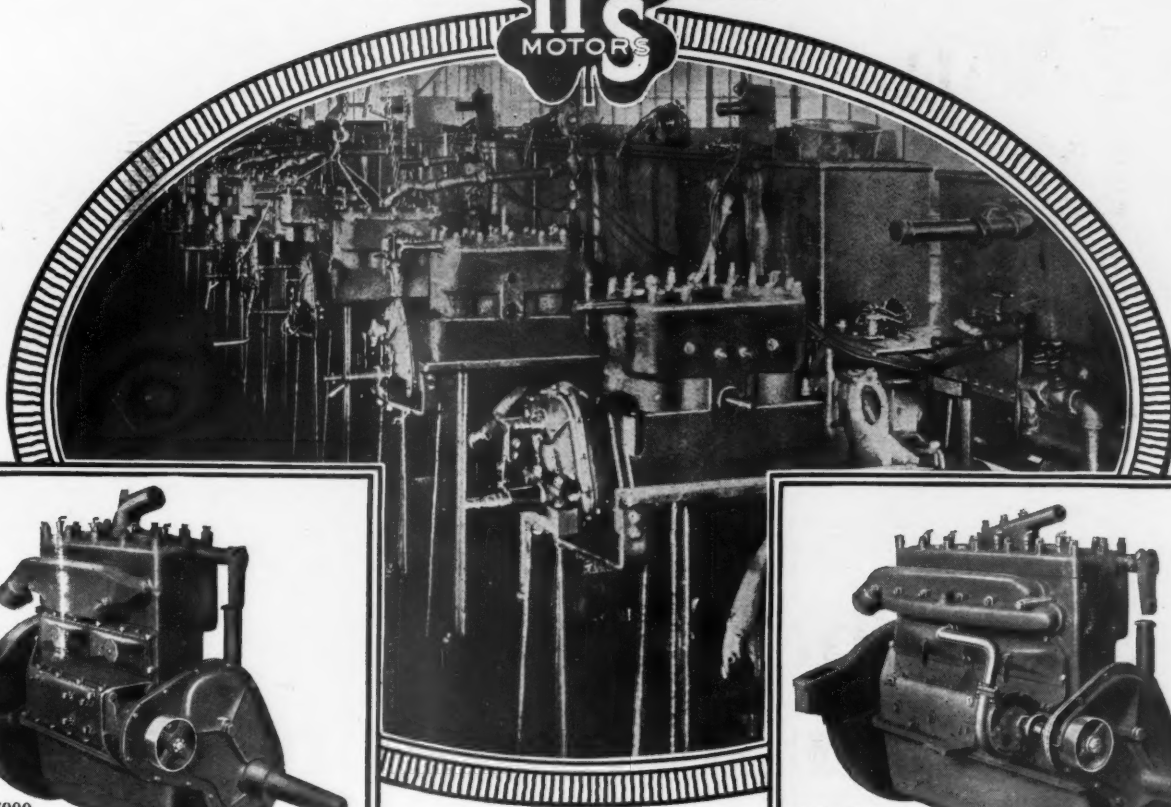
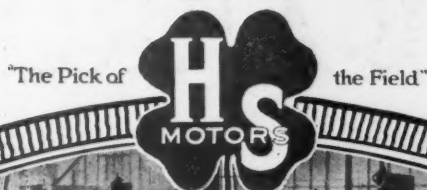
Loses less time on the job  
and off the job.

Costs less to operate and  
less to maintain.

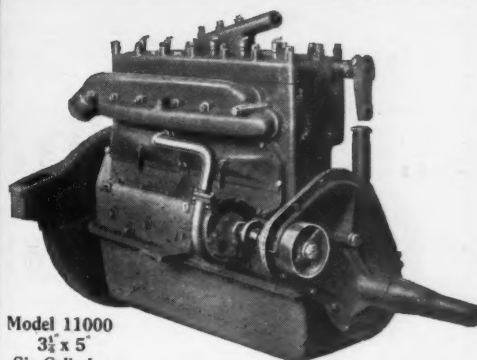
Lasts longer, depreciates  
less, commands a higher  
resale price.

THE PIERCE-ARROW MOTOR CAR COMPANY, BUFFALO, N. Y.

# Herschell - Spillman Motors



Model 7000  
3½ x 5"  
Four Cylinder



Model 11000  
3½ x 5"  
Six Cylinder

## Thoroughly Tested

From raw material through each phase of construction down to the finished product, Herschell-Spillman 3½ x 5 four-cylinder and 3½ x 5 six-cylinder motors meet the most rigid inspection and exhaustive tests.

From the last assembly each motor goes to the testing department where it is run for hours at high speed. The detection of any slight irregularity causes the motor to be disassembled, each part re-inspected and the variation corrected.

In the final test laboratory, under the skilled examinations of experts, the re-assembled motor is run under load to determine power and performance.

Motors that pass these trials recommend themselves. We present them with absolute confidence to the engineer and trade alike, knowing from long manufacturing experience that they represent the utmost in automotive engineering, and that their ultimate performance fully justifies our confidence.

### HERSCHELL-SPILLMAN MOTOR CO.

*Established 1900*

**NORTH TONAWANDA, NEW YORK**

*Located eight miles from Buffalo on the lines of New York Central, Erie and Lackawanna Railroads, and Niagara Falls Trolley, affording unsurpassed transportation facilities.*

*National advertising carries the story of H-S four and six-cylinder motors to several million magazine readers each month.*



*You can get a Signal for YOUR Business*



## The Cry For Transportation

For the second time within three years we are hearing the cry for transportation—more transportation—better transportation.

When our armies demanded more efficient transportation both here and at the front the call went forth for motor trucks. And motor trucks filled that demand.

As a war aftermath we are now confronted with another serious transportation problem. Depreciated equipment and increased demands leave the railroads incapable of handling the traffic.

Again comes the cry—more transportation—better transportation. Again the same answer—motor trucks.

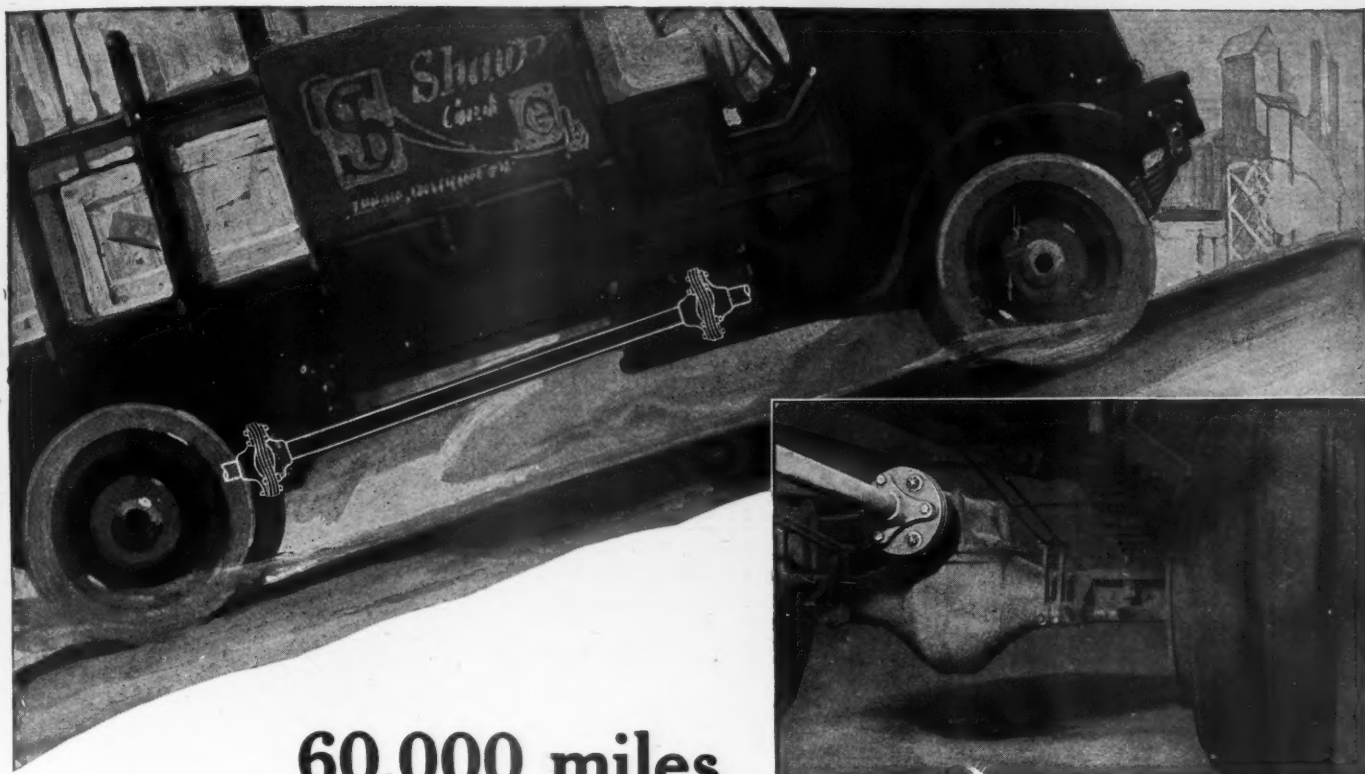
The use of motor trucks for short hauls will relieve the railroads, and motor trucks can handle short hauls quicker and cheaper.

Help the railroads—help relieve chaotic conditions—use motor trucks.

*1 to 5 Ton Capacity*

# SIGNAL

**SIGNAL MOTOR TRUCK COMPANY  
DETROIT**



## 60,000 miles without a single rattle

*The new universal joint that stands the hardest strain on heavy-duty trucks*

**C**AN a universal joint run 60,000 miles without lubrication or adjustment?

After a few thousand miles *metal* universal joints fairly cry out for grease and attention.

Lubrication of metal joints is ineffective, because the rapidly spinning motion of the drive-shaft whirls the grease away from the joint instead of into the wearing parts.

Metal joints quickly wear loose. They transmit road shocks and engine shocks, which severely rack the bearings, differential and transmission.

**How the flexible fabric joint cushions the shocks**

To meet these conditions the Thermoid-Hardy Universal Joint has been perfected. It is constructed of flexible fabric discs which act as cushions in the drive-shaft. Thus it transmits a smooth, even flow of power to the rear axle.

Having no metal-to-metal wearing surfaces the Thermoid-Hardy Joint needs no lubrication. It cannot wear loose.

On many passenger cars as well as heavy-duty trucks it has run 60,000 miles without replacement or adjustment of any kind. Over fifty manufacturers have adopted the Thermoid-Hardy Joint as standard equipment.

Send for advance proofs of the national advertising campaign and our new book, "Universal Joints—Their Use and Misuse." The book will give you in detail the construction of the Thermoid-Hardy Joint, records of performance, opinions of leading engineers and manufacturers who have adopted it.

### Thermoid Rubber Company

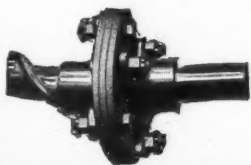
*Sole American Manufacturers*

**Factory and Offices: Trenton, N. J.**

New York Chicago San Francisco Detroit  
Cleveland Atlanta Philadelphia  
Pittsburgh Boston London Paris Turin

### LIST OF USERS

American-British Mfg. Co.  
Anderson Motor Co.  
The Autocar Co.  
Available Truck Co.  
Barley Motor Car Co. (Roamer)  
Briscoe Motor Corp.  
Capitol Motors Corp.  
Jas. Cunningham Son & Co.  
Crow-Elkhart Motor Co.  
Dart Truck & Tractor Corp.  
Diamond T Motor Car Co.  
Doane Motor Truck Co.  
Fageol Motor Car Co.  
H. H. Franklin Mfg. Co.  
Garford Motor Truck Co.  
Gramm-Bernstein Motor Truck Co.  
Hendrickson Motor Truck Co.  
Holt Mfg. Co.  
Indiana Motor Truck Co.  
International Harvester Co. of A., Inc.  
International Motor Co.  
Ky. Wagon Mfg. Co. (Dixie Flyer)  
King Motor Car Co.  
King Zeitler Co.  
Larrabee-Deyo Motor Truck Co., Inc.  
Lexington Motor Co.  
Locomobile Co. of America  
Maxwell Motor Corp.  
Menominee Motor Truck Co.  
Mercer Motors Co.  
Moreland Motor Truck Co.  
McFarlan Motor Co.  
Nelson & LeMoon  
D. A. Newcomer Co.  
E. A. Nelson Motor Car Co.  
Nelson Motor Truck Co.  
O'Connell Motor Truck Co.  
Oliver Tractor Co.  
Oneida Motor Truck Co.  
Packard Motor Car Co.  
Parker Motor Truck Co.  
Patriot Motors Co.  
Phelps Light & Power Co.  
Reliance Motor Car Co.  
Reo Motor Co.  
Reynolds Motor Truck Co.  
Root & Van Devort Engineering Co.  
Sanford Motor Truck Co.  
Service Motor Truck Co.  
Stoughton Wagon Co.  
Studebaker Corp.  
Templar Motors Corp.  
Tioga Steel & Iron Co.  
Tow Motor Co.  
Traffic Motor Truck Corp.  
Transport Truck Co.  
Twin City Four-Wheel Drive Co., Inc.  
Walter Motor Truck Co.  
Ward-LaFrance Truck Co., Inc.  
Watson Products Corp.  
Wichita Motors Co.  
H. E. Wilcox Motor Co.  
J. C. Wilson Co.  
Willys-Overland, Inc.

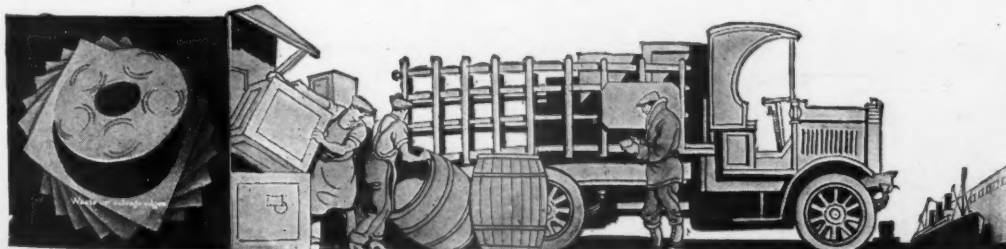


The patented fanwise construction gives the Thermoid-Hardy its great strength. In one test the drive-shaft, itself, was twisted without injury to the universal joint.

## THERMOID-HARDY UNIVERSAL JOINT

**Fanwise construction for strength**

Makers of "Thermoid Hydraulic Compressed Brake Lining" and  
"Thermoid Crolide Compound Tires"





# Parish & Bingham

## PRESSED STEEL

Axle Housings

Axle Housing Covers

Brake Drums

Step Hangers



Torque Arms

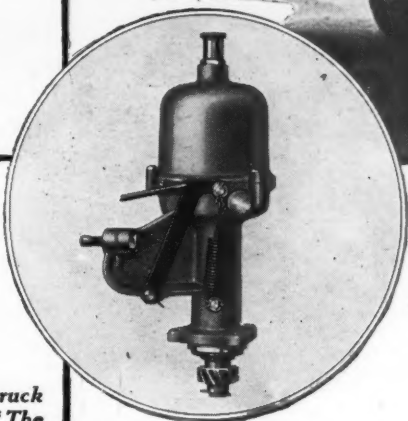
Running-Boards

Engine Pans

PARISH & BINGHAM CORPORATION  
Cleveland Ohio



# FRAMES



No other truck  
has it "The  
Driver under  
the Hood."

## Saving the "Guts" of a Motor Truck

**W**HEN a driver races his motor and lets in the clutch with a bang, what happens to the truck? The whole strain is put *suddenly* on the driving mechanism, with the result that the vital parts wear out before their time.

With the Clydesdale Controller this can't happen. This device idles the motor when the clutch is out, and picks up the load *gradually* until the truck is under way. It positively controls the motor speed, saving gas, oil and tires. It prevents the jerks and strains that cause rapid depreciation. It saves adjustments and replacements so that the truck does its work better and lasts longer.

Every owner, every driver speaks well of the Clydesdale, and in the *last* analysis, that is the real test of a truck's value. The investment in any truck should be measured by *continuous performance*, and the Clydesdale has a reputation for keeping itself out of the shop.

THE CLYDESDALE MOTOR TRUCK COMPANY  
CLYDE, OHIO

---

# CLYDESDALE

MOTOR  TRUCKS

---



*"The Spring is the Thing"*



# MATHER SPRINGS

*Scientifically Heat-Treated*

Unequalled for  
Lightness, Flexibility  
and Endurance

Genuine made only by

**THE MATHER SPRING COMPANY**

Toledo, Ohio

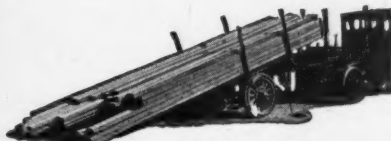
# Trailmobile

Trade-Mark Reg. U. S. Patent Office

## Business Economy Means More Trailmobiles

**B**USINESS is going into a period of economy when every effort will be made to get the utmost from present investments. Trailmobiles enable a firm to do twice as much hauling with the trucks and drivers they already have. That's why demand is so large and growing.

The Trailmobile is an attractive line to handle, because the demand is steady under many different business conditions. It is most complete, including trailers of many types and sizes for practically every hauling requirement. It is the most widely advertised.



Semi-Trailmobiles for use with short wheel-base trucks are equipped with an exclusive fifth-wheel mechanism which makes coupling automatic. They are made in 2½ ton, 4 ton, 6 ton and 10 ton sizes. This is ideal equipment for city hauling.



Light four-wheeled Trailmobiles of 1,250 lbs., ¼ ton and 1 ton capacities are used with passenger cars or light trucks. Lumber dealers, farmers and buyers of farm produce do all their hauling with them and they are used in many other businesses, as a rapid and efficient means of delivery.



Heavy-duty Four-wheeled Trailmobiles for use behind trucks of the usual wheel-base are made in 1½ ton capacity one-way, 2 ton, 3½ ton and 5 ton capacities one-way and reversible.



Pole Trailmobiles for logs, poles, pipes and loads of great length are made with adjustable chock blocks, length compensating springs, and other important mechanical features in 1½-ton, 3-ton and 5-ton capacities. In each case the truck carries an equal load.

Profit margins are the same as on the most desirable trucks. Investment in stock is moderate. On account of the limited number of wearing parts, little service is required, therefore a small amount of spare parts need be carried in stock. The profit is clean. And because of the strong advertising and sales cooperation given by the Trailmobile Company selling expense is low.

Many dealers in all parts of the country find selling Trailmobiles a very good business. Some one is going to prosper by selling them in your territory.

Get the facts now!

**The Trailmobile Company**

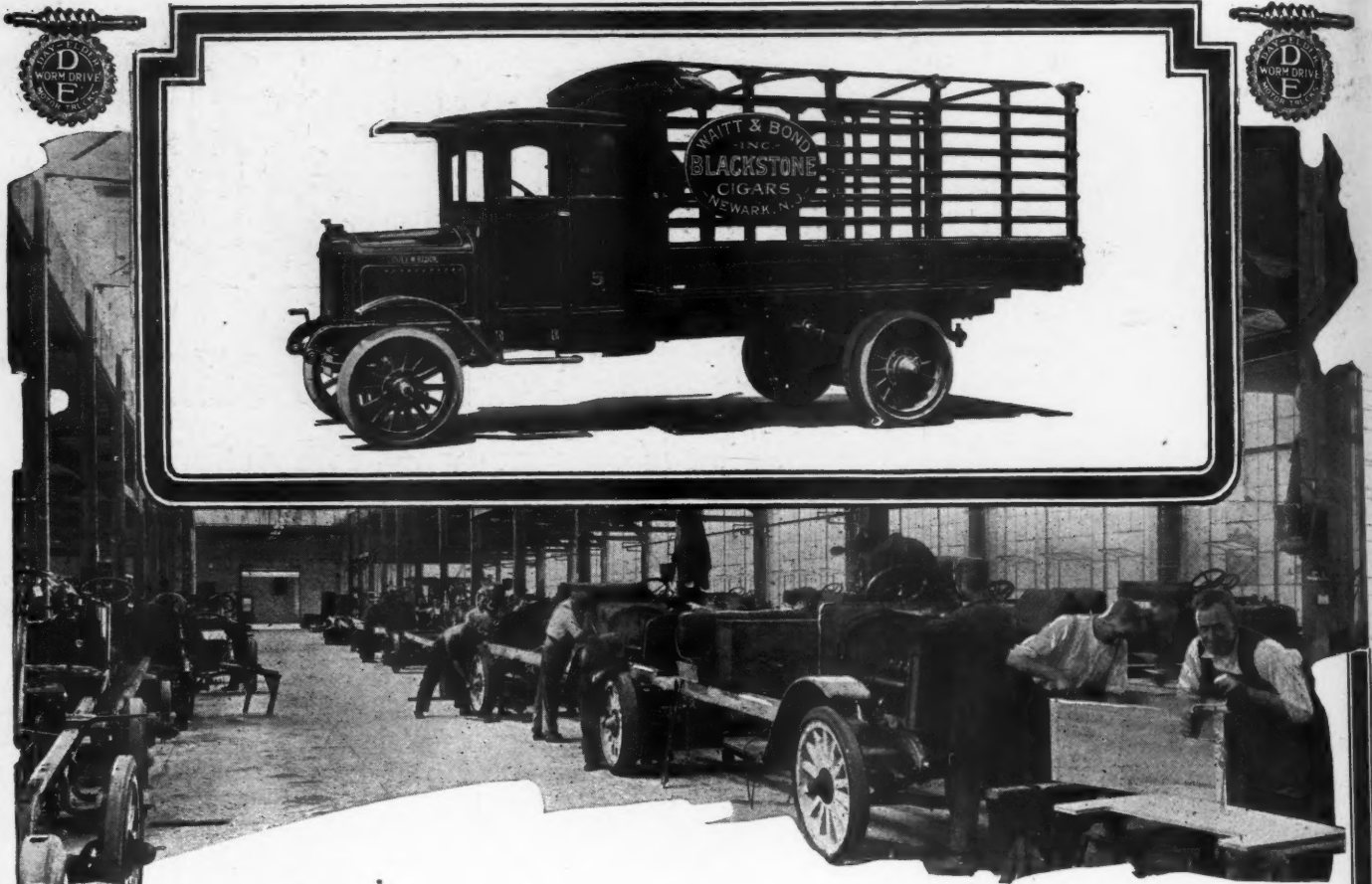
2901 Robertson Ave., Oakley

Cincinnati, Ohio



Good roads are preserved by reducing the load carried on each wheel.





This section of the modern DAY-ELDER plant is typical in its thriving industry of every department of the entire factory. Busy days, these, for every one who has anything to do with DAY-ELDER trucks! Maker, dealer and user, alike, wear that fraternal smile of contentment and pride that comes from the association with a master product, well made.

DAY-ELDER trucks are *built to serve*, not made to sell. While this may seem like a mere juggling of words, it expresses exactly the difference between the sturdy model shown above and the average "volume production" truck. The phenomenal success of the DAY-ELDER line of six standardized models is built on the solid rock of *correct design, the best materials obtainable, and contented workmen*—not on the personality of a master salesman or on speculative publicity.

For this reason, every DAY-ELDER truck is its own best argument. It may look very much like another truck; in fact, the two may be twins in appearance but directly opposite in quality—underneath the paint. Time, alone, is the infallible test. The first DAY-ELDER trucks made are still in operation delivering the goods—dependably and economically.

It is the uncanny, effortless ability of DAY-ELDER trucks to render *continuous capacity service* that makes them the invariable choice on repeat orders. You can best appreciate their wonderful quality and still more wonderful value by comparing a three-year-old DAY-ELDER *in action* with the average truck rounding out its first year of service. Rolling over city cobblestones or ploughing up rocky hillside roads in the country, they arrive every time—on time.

The remarkable calibre of DAY-ELDER service was recently illustrated in a significant manner. The common depreciation charge for motor trucks is 20% per year. Our service department inquired of one hundred different DAY-ELDER users what their depreciation charges were for the *second* year of actual service. They averaged 11½%, and some confessed that their figures were a little more than the facts justified.



Trade Mark Reg.

Dealers are realizing handsomely on DAY-ELDER trucks. Their quality is esteemed because their performance is known wherever motor trucks are used.

# DAY-ELDER

## WORM-DRIVE MOTOR TRUCKS

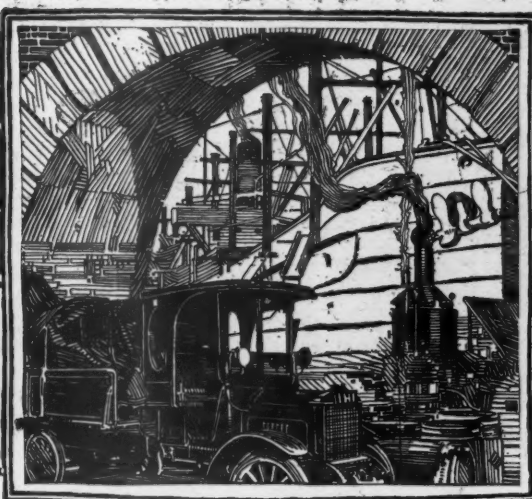
6 MODELS 1 TO 6 TONS

DAY-ELDER MOTORS CORPORATION

FACTORY, NEWARK, N. J., U. S. A.

Southwestern Sales Office, 1701 McGee St., Kansas City, Mo.

There is at present, territory of great possibilities available for a few live wire distributors. Write or wire at once for particulars.



## MULTIBESTOS BRAKE LINING

is factory equipment on  
the following trucks,  
tractors and axles:

### TRUCKS

Acason  
Ace  
Acme  
All Power  
American  
La France  
Armleder  
Atco  
Atterbury  
Available  
Beaver  
Brockway  
Buffalo  
Capitol  
Clydesdale  
Collier  
Concord  
Conestoga  
Day-Elder  
Dearborn  
Dependable  
Detroit  
Diamond T  
Dodge Bros.  
Dorris  
Dort  
Fageol  
Federal  
Ford  
Gabriel  
Garford  
G-M-C  
Giant  
H. R. L.  
Hahn  
Hall  
Hendrickson  
Hewitt-Ludlow  
Huffman  
Independent  
Jackson  
Kalamazoo  
Kelly-Springfield  
Kissel Freightier  
Kleiber  
Lippard-Stewart  
Luedinghaus  
Maccar  
Mack  
Master  
Maxwell  
Menges  
Menominee  
Mutual  
National  
Netco

### Norwalk

O-K  
Onelda  
Packard  
Parker  
Patriot  
Pierce-Arrow  
Rainier  
Selden  
Seneca  
Service  
Signal  
Standard  
Standard Oil  
Company of Ohio  
Sterling  
Studebaker  
Sullivan  
Super  
Texan  
Tiffin  
Tower  
Twin City  
Velle  
Watson  
Wilcox Trux  
**TRACTORS**  
Avery  
Ballor  
Boring  
Chase  
Dauch  
Emerson-  
Brattingham  
G-O  
Hart-Parr  
Illinois Super Drive  
Indiana  
Liberty  
Massey-Harris  
Moline-Universal  
Monarch  
National  
Parrett  
Samson  
Waterloo Boy  
**AXLES**  
Peru  
Salisbury  
Spacke  
Standard  
Timken-Detroit  
Wisconsin  
**MOTORCYCLES**  
Excelsior  
Harley-Davidson

MULTIBESTOS is also used as  
factory equipment on the lead-  
ing American Passenger cars.

## When Truck Engineers Choose Brake Lining

SOME parts of a truck can be chosen with comparative ease. But brake lining—*never*. Automotive engineers know that good brakes mean greater safety; fewer repairs; lower operating cost. They know that brakes have a real bearing on a truck's reputation.

That is why they test brake linings pitilessly to find the *one* lining that will best withstand the grinding strain of truck service. The choice of truck engineers favors Multibestos overwhelmingly. Look at the Multibestos factory equipment list herewith. Make this list *your guide* when relining truck brakes—use only Multibestos. Know, as these engineers know, the safety and long wear of the Multibestos Interlocking Weave, long fibred asbestos and sturdy wire strands!

Send for valuable free booklet,  
"The Care of Your Brakes"

MULTIBESTOS COMPANY, Walpole, Mass., U. S. A.  
CHICAGO, 1430 Michigan Ave. CHATTANOOGA, 8th & Broad Sts.  
SAN FRANCISCO, 1159 Post St. NEW YORK, 105 W. 63rd St.  
KANSAS CITY, 3104 Tracy Avenue (West of Broadway)

# MULTIBESTOS BRAKE LINING



# MONARCH

*Limits the Speed  
and the Expense*

Lock the Monarch Governor  
at *your* speed limit, put the  
key in your pocket and forget  
it. You *know* then that your driver  
cannot exceed the limit you have  
set, that he cannot tamper with the  
Monarch Governor without your knowl-  
edge, and that you are safeguarded  
against the destructive abuses and risks  
of reckless driving.

*Write for "Monarch Facts"*

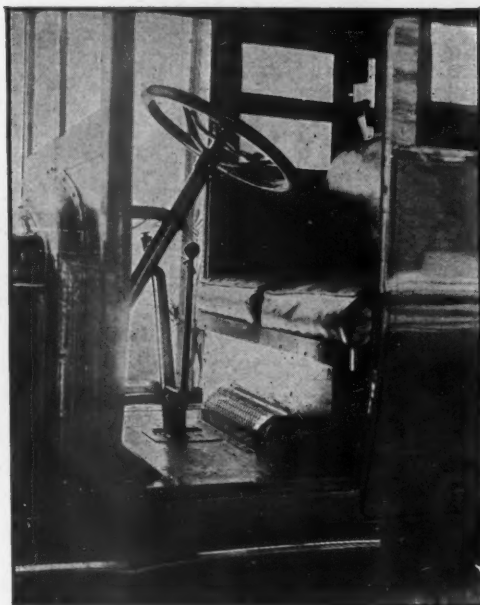
**MONARCH GOVERNOR COMPANY**  
DETROIT MICHIGAN

**FOR TRUCKS AND TRACTORS**





*The Heat is There  
—Why Not Use It?*



*Type "DWS" Heater—A Standard Equipment Installation*



*The Heat is There  
—Why Not Use It?*

# PERFECTION MOTOR CAR HEATERS

## *Solve Your Winter Truck Driver Problems*

**T**HE greatest problem now faced by motor truck operators is the human element—the truck driver. Whether your motor trucks make a favorable or unfavorable showing depends greatly on the dependability and efficiency of the driver.

To get the best results from your trucks you must consider the driver's comfort in cold weather.

A Perfection Motor Car Heater will make a truck

cab comfortably warm on the coldest winter day. It eliminates all driving discomfort and speeds up deliveries. Easily installed. Utilizes exhaust gases. No operating expense—*"The Heat is There—Why Not Use It?"*

We have already shipped 1500 Perfection Heaters to one large truck manufacturer for use as standard equipment. Inquiries are increasing rapidly from fleet owners and manufacturers.

***45 Manufacturers of Motor Vehicles are Now Using Perfection Heaters as Standard Equipment***

An extensive national advertising campaign will carry the message of Perfection Heaters to millions of readers. We are now prepared to serve you promptly on this equipment. Write for full information.

***The PERFECTION HEATER & MANUFACTURING CO.***  
6552 CARNEGIE AVENUE CLEVELAND, OHIO

MANUFACTURED AND SOLD IN CANADA BY RICHARDS-WILCOX CANADIAN COMPANY, LTD., LONDON, ONTARIO



# For Fall's

## PRICES

1 1/2 Ton Chassis	\$2750
1 1/2 Ton, Completely Equipped	3150
2 1/2 Ton Chassis, 156" Wheelbase	3450
2 1/2 Ton Chassis, 144" Wheelbase	3450
2 1/2 Ton Chassis, 180" Wheelbase	3600
2 1/2 Ton Chassis, Completely Equipped, 156" and 144" Wheelbase	3900
2 1/2 Ton Chassis, Completely Equipped, 180" Wheelbase	3950
3 Ton Chassis, Sheldon Axles	3650
3 Ton, Completely Equipped	4000
Furnished in 144", 156" and 180" wheelbase with additional charge of \$150 for the longer wheelbase.	

### Chassis Only, for Export

1 1/2 Ton	\$2750
2 1/2 Ton	3450

## Specifications

Machine Spring Sectional  
 Radiator  
 Timken-Detroit Front Axle  
 Buick Motor  
 Alwater-Kent Distributor  
 12 & 16 Multiple Dry Disc  
 Clutch  
 Carter Transmission  
 Cutts Control  
 Ross Steering Gear  
 Spicer Universal Joints  
 Timken-Detroit Rear Axle, with  
 Spicer Rear Axle, with  
 Herschman Drive  
 Mather Springs  
 Duesch & Stephens Frame  
 Dayton Cast Steel Wheels  
 Firestone Tires

## Special Standard Equipment

Radiator Guard  
 Steel Channel Bumper  
 All-weather Cab  
 Westinghouse Self-Starter  
 Westinghouse Generator  
 Westinghouse Electric Lights  
 with Dimmers  
 Special Device to make Head-  
 Lights work automati-  
 cally with front wheels.  
 Extra Battery  
 Electric Horn  
 Power Governor  
 Variable Governor  
 Fully Painted  
 Steel Wheels  
 1 1/2 to 3 1/2 ton capacities  
 Prices \$2750 to \$4000  
 Solid and pneumatic tires

SHORT now a half million freight cars and unable to move normal traffic because of strikes and bad weather, how can the railroads cope with fall's peak loads of grain, coal and other products requiring extra tens of thousands of cars?

They can't! Motor trucks must carry the burden of fall's industrial tonnage.

Trucks must both get the raw materials and deliver the finished products. Long hauls as well as short hauls will require trucks.

Manufacturers who plan now to use trucks will have them when needed and their goods will continue to move when those of competitors are tied up in warehouses and terminals.



# peak loads

The impending transportation emergency presents an opportunity to dealers in Ace Motor Trucks such as they have never before known.

For unless trucks keep industrial tonnage moving it won't move!

Dealers can relieve the situation by offering Ace completely equipped trucks to business houses now on the basis of immediate delivery. Grasp your opportunity by getting in touch with us at once.

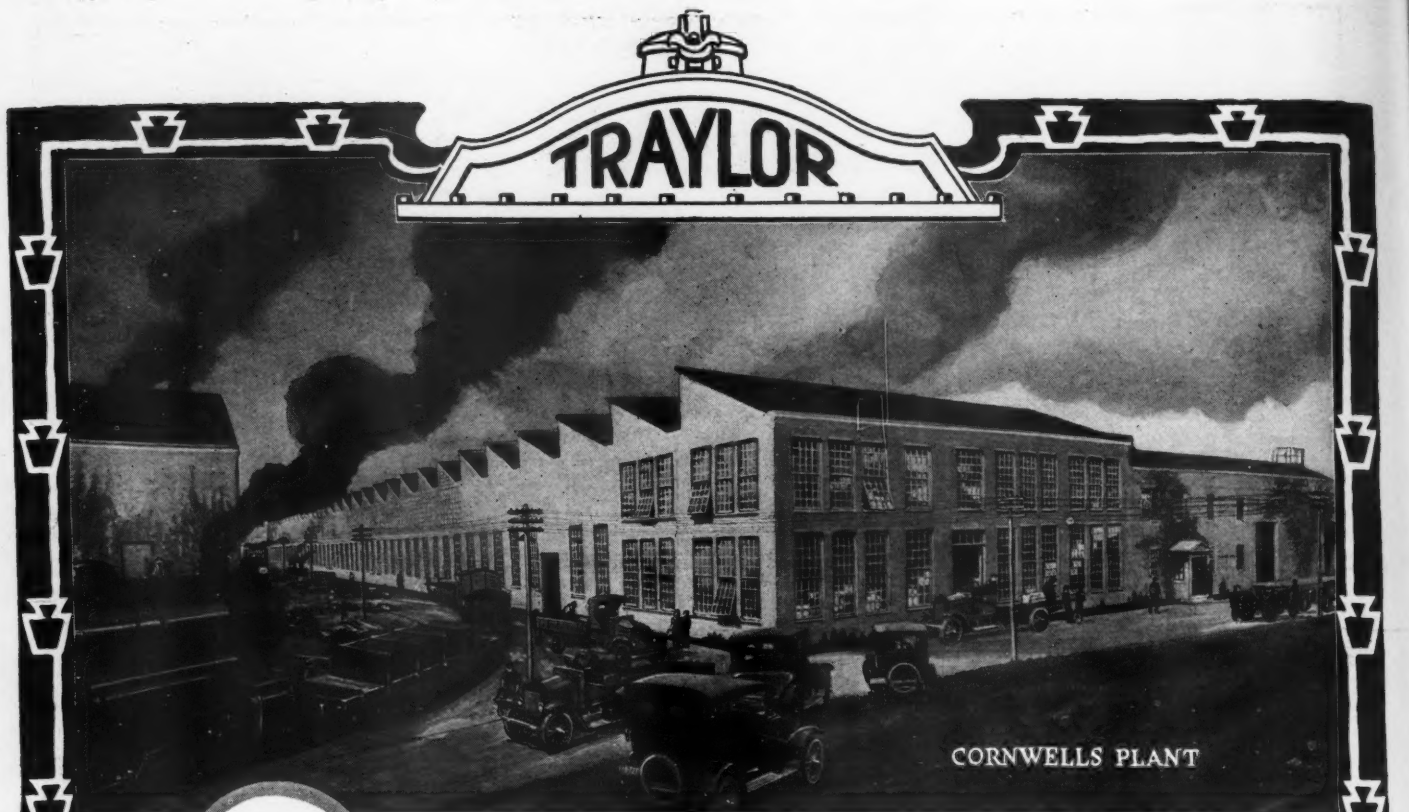
The American Motor Truck Co.  
Newark, Ohio  
Automotive Products Corp., Export Dept.  
Woolworth Bldg., New York City, N. Y.  
Columbia Street, Autopacdon, New York

**Ace**  
MOTOR  TRUCKS  
**IMMEDIATE  
DELIVERY**



**The AMERICAN MOTOR TRUCK COMPANY**  
NEWARK O H I O.





CORNWELLS PLANT



*"Products of an Old Organization"*

With a production of 10,000 motor trucks and 20,000 farm tractors, the Traylor plants mother a community of modern factory-built homes for employees that includes club quarters and a moving picture theatre. On the Delaware River, favored by good railroad (main line P. R. R.) and highway connections, shipping conditions are excellent.

Great modern plants covering over 114 acres are in full production.

The dominant influence of Traylor resources—both financial and natural—assures continuous, uninterrupted production and immediate deliveries.

Traylor Engineering & Manufacturing Co.  
Allentown and Cornwells, Pa.



*Some Territory Open  
to Responsible  
Dealers*

Allentown

New York

Chicago

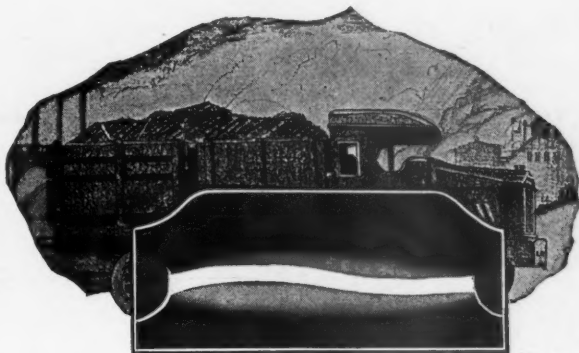
Pittsburgh

Los Angeles

Spokane

**MOTOR TRUCKS &  
FARM TRACTORS**

# motor trucks don't go on "joy rides"—that's sure



the white hot spark you want  
when you want it—and every time!

no siree, they work and they have  
to be right on the job.

they need white hot "juice," all-  
day-every-day, up or down hill, high  
or low speed, Winter and Summer.

that's why more motor truck  
manufacturers equip with Eisemann  
"mags" than with any other ignition  
system—

for the Eisemann "mag" is the  
simplest, most economical, the abso-  
lutely dependable form of ignition  
—the ignition that lasts as long as  
the engine.

ignition is the heart of any engine,  
and truck drivers want the ignition  
that *won't* lie down.

**THE EISEMANN MAGNETO CORPORATION**  
32 Thirty-third Street, Brooklyn, N. Y.

Detroit:  
429 Willis Avenue, W.

Chicago:  
1469 So. Michigan Avenue

## sparks

11. has a "mag" any connection with  
a battery? none whatever

12. where does the "mag" get its  
"juice"? makes it

13. when? right along—as the  
engine runs

14. does the "mag" juice have to be  
made strong? no, it starts white hot

15. who is the pioneer of the high-  
tension "mag"? Eisemann

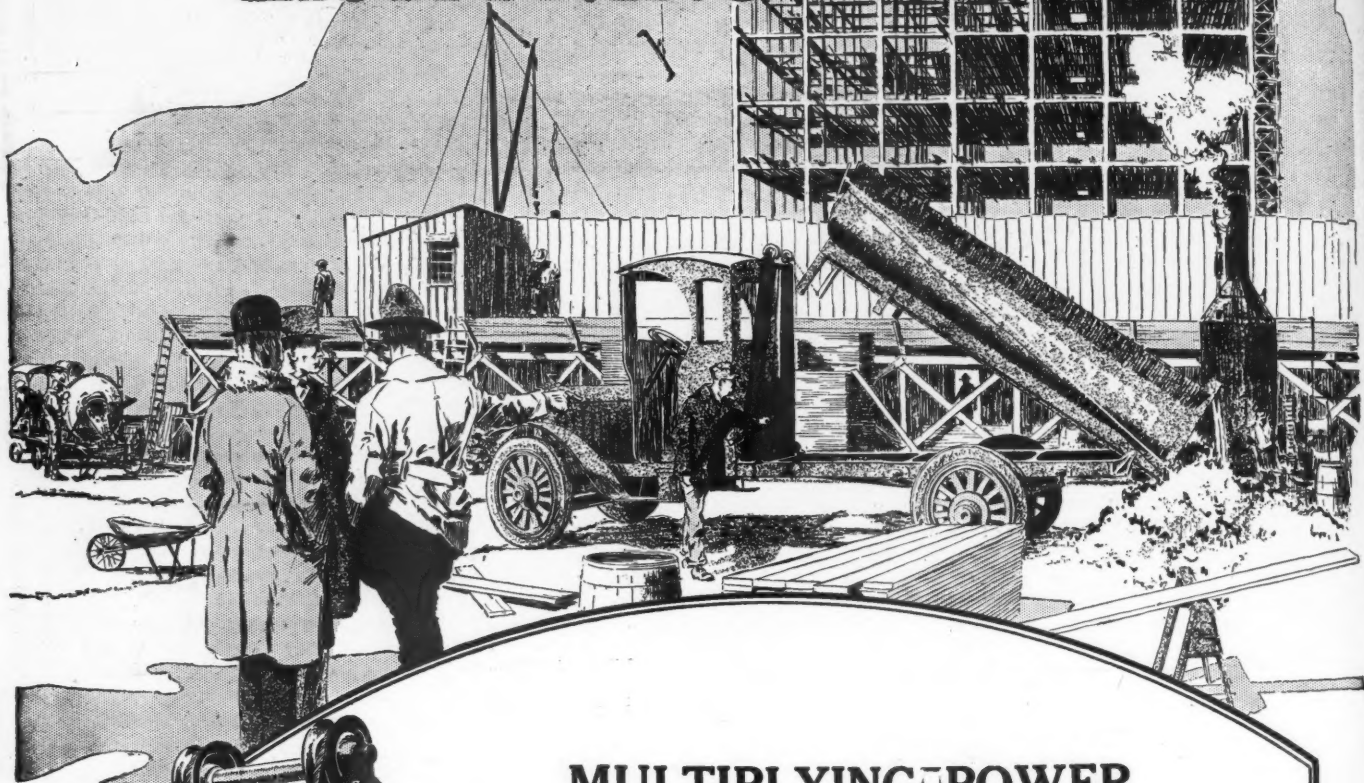
(to be continued)





# COLUMBIAN

## LIGHTNING HOIST



### MULTIPLYING POWER

A SIMPLE device founded on sound mechanical principles and durably constructed of the best materials forms the "power plant" of the COLUMBIAN LIGHTNING HAND HOIST. It is this device which gives the Columbian Hoist a giant's strength, and enables one man to dump a 5-ton load with ease.

A Columbian Lightning Hand Hoist on your truck dump bodies means conservation of high-priced labor, more efficiency in deliveries and increased profits for you.

The reasonable first cost, and almost complete elimination of maintenance costs, together with its power, speed, durability and capacity, have made it the most popular Hand Hoist in the United States today. It will fit any chassis and is mounted without drilling holes in the frame, and can be used in connection with either a metal or wooden dump body.

Write to the Distributor nearest to you or to us direct for descriptive circular No. 69 and further details.

#### DISTRIBUTORS:

Davenport Body Co. 1509-33 Rockingham Road Davenport, Iowa	Giant Motor Truck Co. Granville Pac. St. Vancouver, B. C.	Beard & Co. 418 Keller Building Louisville, Kentucky
Hummel Mfg. Co. 3008 La Salle St. St. Louis, Missouri	Largerquist Car & Auto Co. 514 W. 2nd St. Des Moines, Iowa	Blackwell Motor Co. Cor. 3rd and Post Sts. Spokane, Washington
Jules Mechanic 248 Croft St. Pittsburgh, Pa.	S. S. Albright 13th and U Sts. Sacramento, Cal.	Landes & Co. 2nd, West and South Temple Salt Lake, Utah
Jacob H. Press & Sons, 300 Halsted Street, Chicago, Illinois		

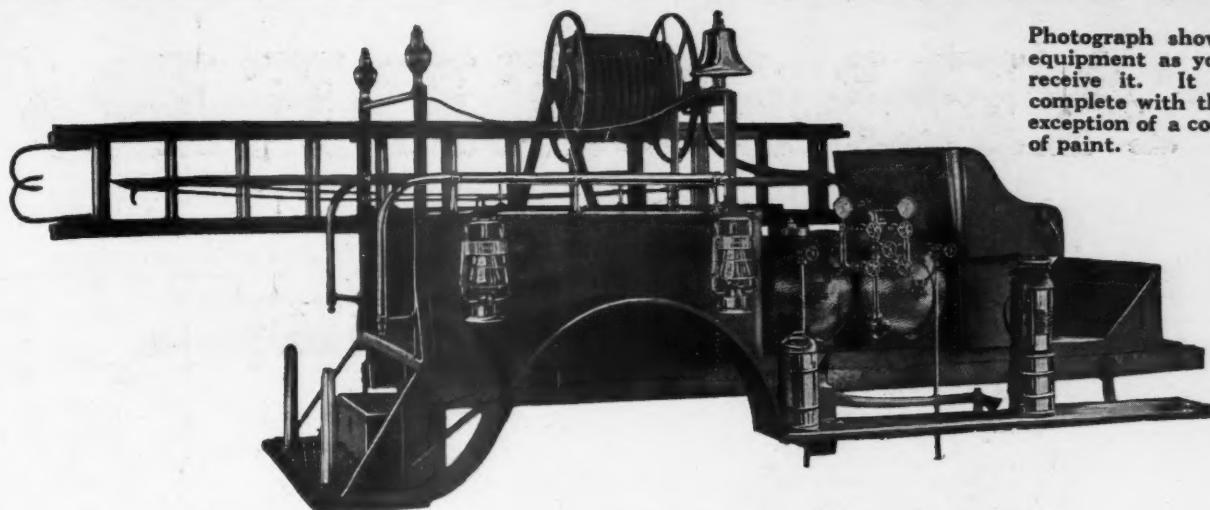
### COLUMBIAN STEEL TANK COMPANY

"Tanks for the World"

Established 1894

1519-1625 W. 12th St., Kansas City, Mo.





Photograph shows equipment as you receive it. It is complete with the exception of a coat of paint.

## MAKE A DOUBLE PROFIT ON THE TRUCK YOU NOW SELL!

**C**HILDS APPARATUS is now made to fit any chassis—that means we can supply you with apparatus complete, ready to go on any make of motor truck you sell, giving you a new opportunity to make two profits where there was only one before.

You get this sturdy, dependable equipment all complete, except a coat of paint; it hooks up to the chassis by tightening some bolts. Then you deliver the fire department truck complete.

Sell a fire truck to your town. A chance for a sale you never made before—a profit that you have been missing.

**O. J. CHILDS COMPANY, UTICA, N. Y.  
FIRE APPARATUS**

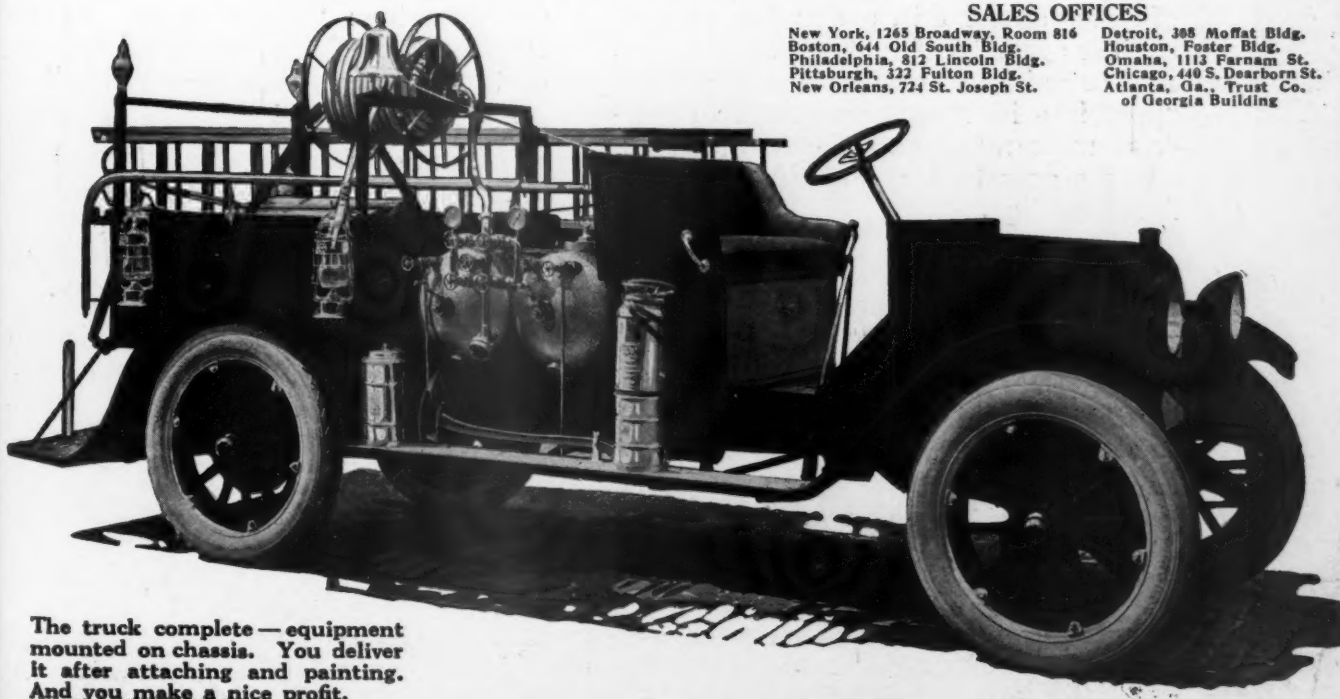
Makers of  
Fire Apparatus  
for the past  
20 years



### SALES OFFICES

New York, 1265 Broadway, Room 816  
Boston, 644 Old South Bldg.  
Philadelphia, 812 Lincoln Bldg.  
Pittsburgh, 322 Fulton Bldg.  
New Orleans, 724 St. Joseph St.

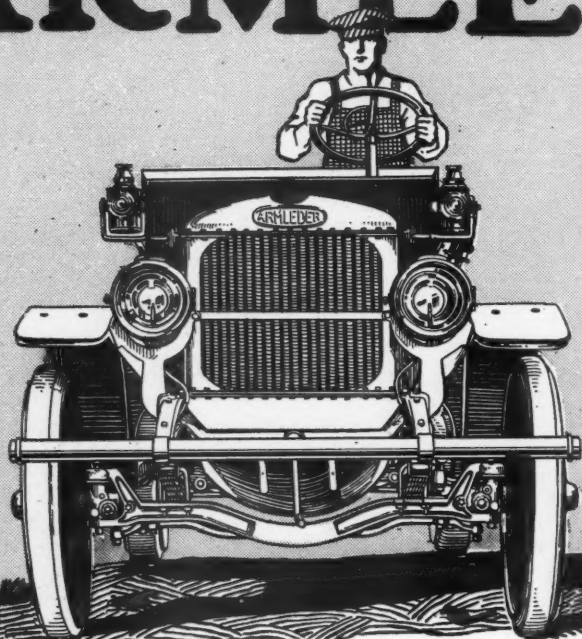
Detroit, 385 Moffat Bldg.  
Houston, Foster Bldg.  
Omaha, 1113 Farnam St.  
Chicago, 440 S. Dearborn St.  
Atlanta, Ga., Trust Co.  
of Georgia Building



The truck complete—equipment mounted on chassis. You deliver it after attaching and painting. And you make a nice profit.



# ARMLEDER



## Motor Trucks

### DEFY ALL COMPETITION

The Armleder is truly a competition defying truck. Armleder dealers experience no difficulty in convincing prospects of its superior merit, even when arrayed against every truck on the market today. It is astonishing how customers instantly appreciate its sturdy construction, powerful appearance and the many exclusive features that are distinctive of the Armleder line.

Armleder owners are constant advertisers of Armleder quality. Not a man among them but boosts the local dealer and the Armleder line at every opportunity.

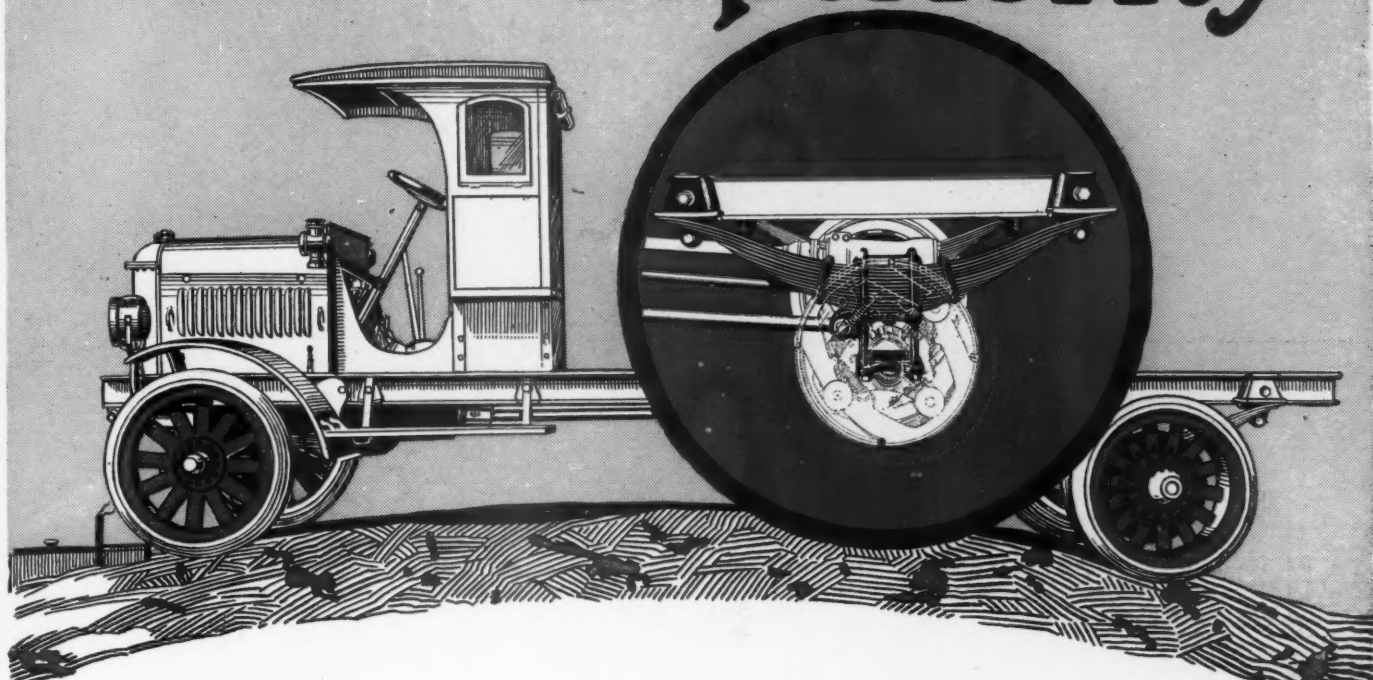
This good will is worth a great deal to you as a truck dealer. In fact, it is a priceless possession. One of our most successful dealers writes: "We know that no other truck built can be sold with so little effort on the part of a sales organization."

There's the vital testimony of a dealer who is out on the firing line. In the midst of his success he stops for a moment to express his appreciation of the truck which on account of its unusual construction will be of great interest to you.

If you are interested in selling a motor truck on which you can build a future, write for the Armleder proposition to dealers.

## THE O. ARMLEDER COMPANY,

# Inbuilt Superiority



## ONE OF THE MANY EXCLUSIVE FEATURES OF ARMLEDER SUPERIORITY

The springs are only one of the patented features used exclusively in Armleder Motor Trucks. There are no shackles or shackle bolts; about 48 wearing parts are eliminated; each leaf is made of triple heat-treated Vanadium steel; pads between springs and axles are machined, set in lead, air and water tight; held by strong U-bar clips,

they will not loosen; springs replaced free if they break; they are 64 inches long and shorten 16 to 20 inches under load; without load weight rests on tips of springs; with load weight rests 8 to 10 inches from the ends of the springs; they ride like touring cars; reduce gasoline and upkeep costs; increase life of tires and truck.

1, 2½ and 3½ Ton Models—Worm Drive

**CINCINNATI, OHIO, U. S. A.**



# ZENITH

## CARBURETOR



*Another  
Zenith  
Achievement*

When on August 10th and 11th off the Isle of Wight, "Miss America," driven by her owner, Gar Wood of Detroit, won the Harmsworth Trophy, her engines were Zenith-equipped.

Your car or truck should be equipped with the dependable Zenith.

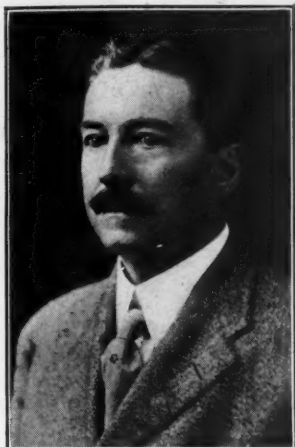
**ZENITH CARBURETOR COMPANY**

New York

DETROIT

Chicago

*European Factories:—London, England; Lyons, France; Turin, Italy*



## How Walter, the Inventor, combined the Engineering Genius of France & America in a Motor Truck

As a pioneer in automotive engineering, Mr. William Walter has originated many of the greatest improvements in motor truck design.

The genius of Mr. Walter has developed during the last 15 years, departures which have paved the way to the masterful Walter Motor Truck of today, with exclusive features such as the *Walter Suspended Drive* and *Locking Differential*.

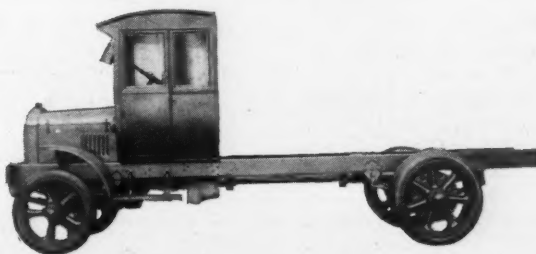
Distinctive engineering features, protected by basic patents have perfected a motor truck of such dominating mechanical excellence, as to forecast its leadership in the heavy-duty Motor Truck field.

Since the first Walter Truck went into service 10 years ago, it has made enviable records for strength, economy and durability. Many of these first Walter Trucks are still operating efficiently in the service of the original owners—a convincing monument to Walter construction.

### WALTER SALES COMPANY

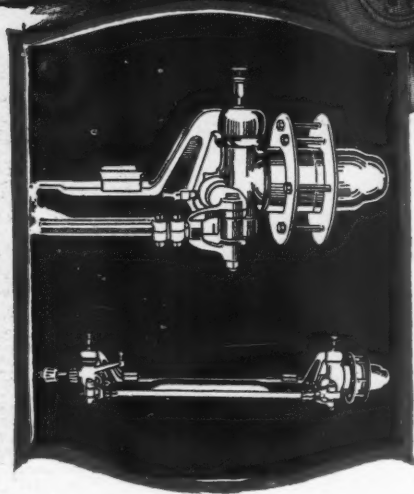
Builders of 3 Ton and 5 Ton Capacity Trucks  
605 Fifth Avenue, New York

The Walter Franchise offers to dealers the opportunity to sell the best trade, on a permanent basis, offering broad protection, large profits and the benefit of close sales co-operation. You owe it to yourself to write for details.



Custom Built  
**WALTER**  
Motor Trucks of Permanence





Master front axles are made to special order by the Timken Axle Co. They are forged from one piece of high carbon steel in I-beam form and three times heat treated. They have a tensile strength of more than 100,000 pounds to the square inch. Note the dimensions of the spindle yokes. Every part is exceptionally sturdy and powerful.

## *balanced oversize*

makes Master Trucks masters of the cotton industry

**A**CROSS the fields from the pickers or over the hill on the road to the cotton gin the Master will haul all the cotton you can pile on. And, when the bales are stacked high on the sturdy Master body, the balanced oversize that insures an even distribution of surplus strength through every Master part brings the top-heavy load home with safety.

The poised power and strength that have made Master Trucks masters of the industries — one of the six greatest trucks in America — makes the Master the truck for the heavy loads and the hill roads of the Southland.

High grade Dealers are invited to write or wire concerning territory.

MASTER TRUCKS, Inc.  
3132-3138 S. Wabash Ave., Chicago

# MASTER

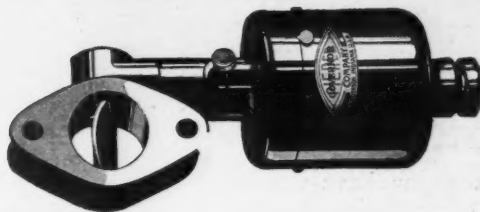
MASTER OF THE LOAD ON ANY ROAD

# PIERCE

"ONE MOTOR TRUCK  
ON THE JOB  
IS WORTH TWO TRUCKS  
IN THE REPAIR SHOP"

## GOVERNORS

Keep Your Trucks on the Job



From both an economical and from a service standpoint, ungoverned truck engines are a liability instead of an asset.

Trucks equipped with Pierce Governors cannot be driven at reckless speeds. They are therefore longer lived, make fewer trips to the repair shop, and can be operated more economically.

That is why "103" Truck Manufacturers supply Pierce Governors as regular equipment.

**The Pierce Governor Company**

WORLD'S LARGEST GOVERNOR BUILDERS

Anderson-Indiana  
U.S.A.





# CERTIFIED MALLEABLE CASTINGS

THE AMERICAN MALLEABLE CASTINGS ASSOCIATION

## A C A CERTIFIED

Are your Malleable Castings

### "CERTIFIED"?

If they are you have the assurance of using the best that science and skill can produce. It is the achievement of the most conservative and best informed men in the industry.

It is your guarantee.

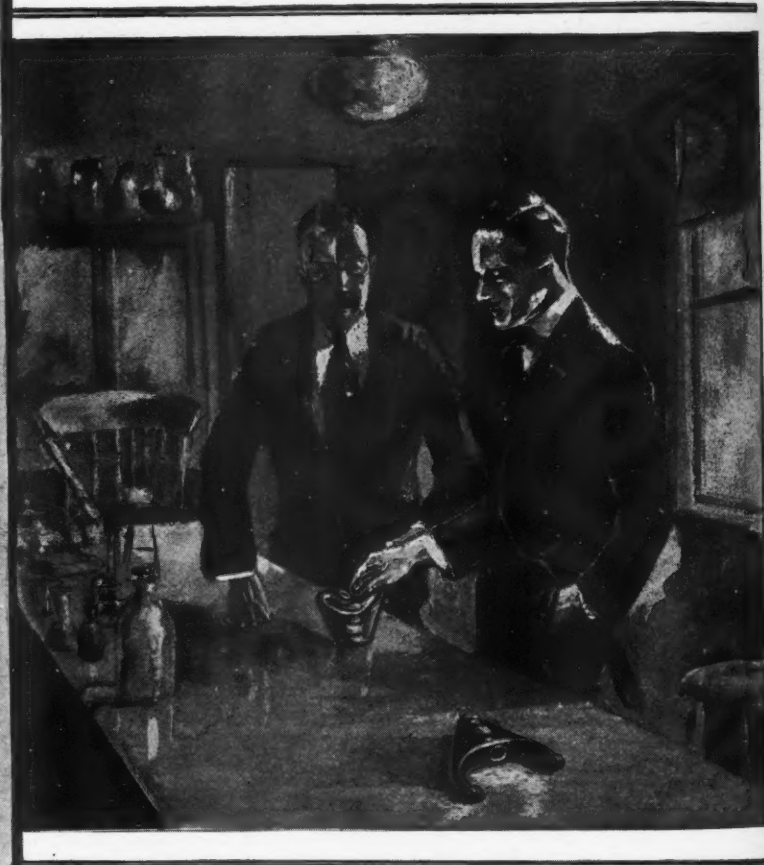
Then specify "Certified Malleable."

*Members Receiving Certificates for Quarter Ending June 30th, 1920.*

Albion Malleable Iron Co.	Albion, Mich.
American Malleables Co.	Lancaster, N. Y. and Owosso, Mich.
Baltimore Malleable Iron & Steel Casting Co.	Baltimore, Md.
Belle City Malleable Iron Co.	Eacine, Wis.
Chain-Belt Co.	Milwaukee, Wis.
Chicago Malleable Castings Co.	West Pullman, Chicago, Ill.
Chisholm-Moore Mfg. Co.	Cleveland, Ohio
Columbus Malleable Iron Co.	Columbus, Ohio
Dayton Malleable Iron Co.	Dayton, Ohio and Ironton, Ohio
Devlin Mfg. Co., Thomas	Philadelphia, Pa.
Eastern Malleable Iron Co.	
Naugatuck Malleable Iron Works	Naugatuck, Conn.
Bridgeport Malleable Iron Works	Bridgeport, Conn.
Troy Malleable Iron Works	Troy, N. Y.
Wilmington Malleable Iron Works	Wilmington, Del.
Vulcan Iron Works	New Britain, Conn.
Erie Malleable Iron Co.	Erie, Pa.
Federal Malleable Co.	West Allis, Wis.
Fort Pitt Malleable Iron Co.	Pittsburgh, Pa.
Frazer & Jones Co.	Syracuse, N. Y.
Globe Malleable Iron & Steel Co.	Syracuse, N. Y.
Haskell & Barker Car Co.	Michigan City, Ind.
Illinois Malleable Iron Co.	Chicago, Ill.
Iowa Malleable Iron Co.	Fairfield, Ia.
Kalamazoo Malleable Iron Co.	Kalamazoo, Mich.
Laconia Car Co.	Laconia, N. H.
Marion Malleable Iron Works	Marion, Ind.
National Malleable Castings Co.	Cleveland, Ohio, Chicago, Ill., Indianapolis, Ind., Toledo, Ohio, E. St. Louis, Ill.
Northern Malleable Iron Co.	St. Paul, Minn.
Northwestern Malleable Iron Co.	Milwaukee, Wis.
Pittsburgh Malleable Iron Co.	Pittsburgh, Pa.
Pressed Steel Car Co.	Pittsburgh, Pa.
Rockford Malleable Iron Works	Rockford, Ill.
Ross-Meehan Foundries	Chattanooga, Tenn.
St. Louis Malleable Casting Co.	St. Louis, Mo.
Standard Malleable Castings Co.	Terre Haute, Ind.
Stowell Co.	South Milwaukee, Wis.
T. H. Symington Co.	Rochester, N. Y.
Terre Haute Malleable & Mfg. Co.	Terre Haute, Ind.
Union Malleable Iron Co.	East Moline, Ill.
Vermilion Malleable Iron Co.	Hoopeston, Ill.
Wanner Malleable Iron Co.	Hammond, Ind.
Wisconsin Malleable Iron Co.	Milwaukee, Wis.
Zanesville Malleable Co.	Zanesville, Ohio

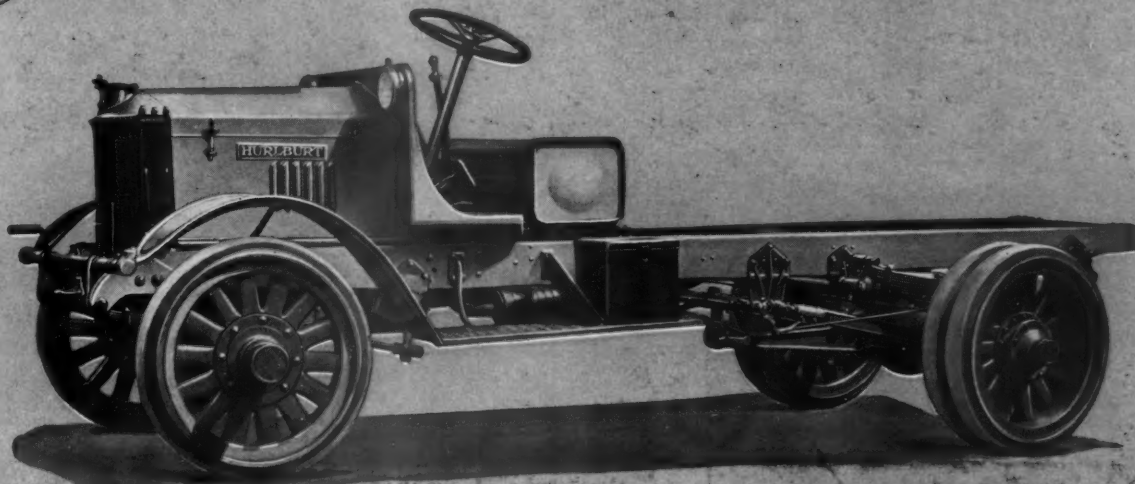
**THE AMERICAN MALLEABLE CASTINGS ASSOCIATION**

1900 Euclid Bldg. Cleveland, Ohio



# HURLBURT

*A Conservative Truck*



THE Hurlburt is a conservative motor truck.

The first Hurlburt Trucks were made in 1912, and are still doing their daily work. The number has always been small, but they have been well built. Most of them were sold within a few miles of the factory, and close study of their records shows that the Hurlburt Truck deserves a wider field and greater sales.

The Hurlburt business has been purchased by a firm with the financial standing and the manufacturing ability to put the Hurlburt Truck where it belongs in the truck field.

**Harrisburg Manufacturing & Boiler Co.**

Harrisburg, Pa.



Accurate  
As  
A Watch

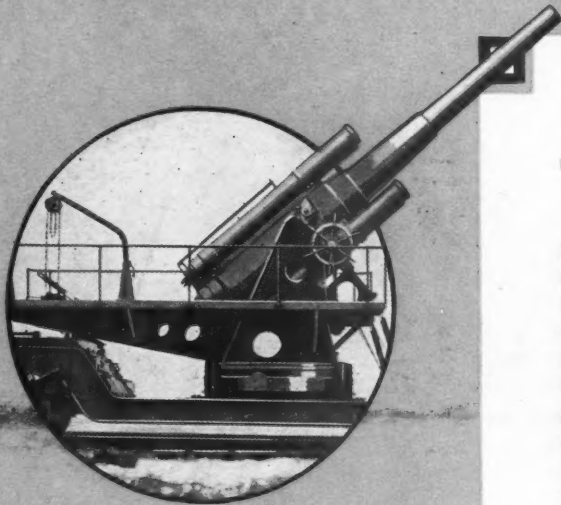


Sturdy  
As  
An Oak



# HURLBURT

## *A Conservative Truck*



**8" Railway Gun Mount**

The first railway mount ever made in America was made by the manufacturer of the Hurlburt Truck.



**Hurlburt Truck**

### **Built by a Conservative Manufacturer**

THE Harrisburg Manufacturing & Boiler Co. have been building fine machinery for a select list of customers for 31 years. Among their most notable pieces of work is the great water-wheel turbine which operates the Panama Canal. This minutely timed and accurately controlled mechanism was built from the specifications of the United States Government Engineers and represents the highest type of material and workmanship.

Again, during the late war, the Government recognized the unusual ability of this organization and called upon them for emergency production of the new railway artillery mounts. In this task they achieved the record both for accuracy and speed of manufacture.

Most important of all, this firm has a successful record in the manufacture of motor trucks, motor driven fire apparatus and artillery tractors for Government and commercial use.

The same men who have conducted this business for 31 years past are now building and backing the Hurlburt Truck.

### **Seeking Conservative Dealers**

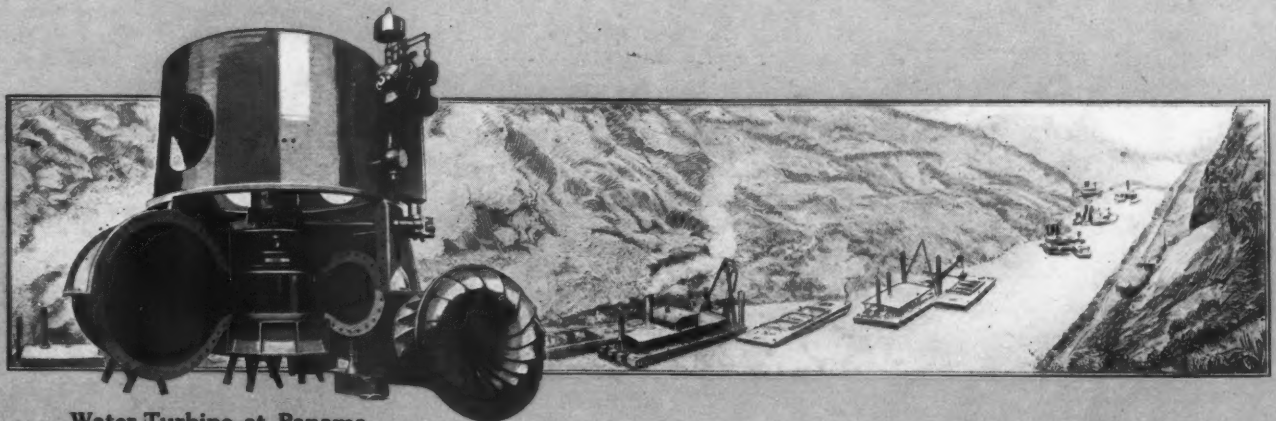
Hurlburt Trucks will be sold only through men who have established themselves as conservative, successful motor car merchants.

Any such man who will carefully investigate the Hurlburt Truck and the firm behind it, will find that it offers a sound proposition for him.

We would welcome correspondence and personal conference with merchants of this type.

**Harrisburg Manufacturing  
& Boiler Company**

*Harrisburg, Pa.*



**Water Turbine at Panama**

The great water turbine that operates the Panama Canal was produced by the firm which is now building the Hurlburt Truck.



# **QUALITY DROP FORGINGS**

**FOR**

**AUTOMOTIVE  
CONSTRUCTION**

---

**SPECIALISTS IN THE MANUFACTURE OF**

**I-BEAM FRONT AXLE FORGINGS**

---

**WESTERN DROP FORGE CO.**

**MARION, INDIANA**




# TITAN

## 2½ Tons

Speed: 25 Miles an Hour

## HI-WAY TRANSPORT



## 3½ Tons

Speed: 18 Miles an Hour

## High-Speed Higher Powered Motor Trucks

### Low Motor Speed

The high maintenance cost in the past of high speed trucks has been directly due to the terrific vibration of motor and driving parts.

This has been entirely eliminated in TITAN "Hi-Way Transport" trucks. The motor in the 2½ ton TITAN at no time exceeds 1100 RPM, altho the truck is traveling 25 MPH, and in the 3½ ton TITAN is governed down to 1000 RPM.



### Inter-City Hauling Your Biggest Field

The condition of the railroads is steadily growing worse, and the impending necessity of diverting every available car to the transportation of fuel and food makes it imperative that motor trucks relieve the congestion.

Motor trucking has assumed such proportions that it has become financially stable, and it represents your most profitable field today. The TITAN line of "Hi-Way Transport" trucks assures you your share of this business *because the trucks are specially built for the purpose.*

**HEAVY DUTY 5-6 TON TRUCKS**

**TITAN TRUCK CO.**

**Milwaukee, Wisconsin**

# KEEP *the* TRAFFIC MOVING KLAXON



For Sound Satisfaction  
Oil Your Klaxon



# Hang On, Everybody!

A faint ray of light may now be seen on the horizon. You are leaving in the background the worst time in the history of the truck game. Bankers are beginning to get wise to the fact that truck paper is all right.

Why?

Horses are gone, man power is limited and business requires speed. This makes Trucks just as essential as Railroads and Money in putting Food into the mouths of the people.

Early this fall crop movement will be financed—then the money flood gates will open up. So grit your teeth, keep a stiff upper lip and fling the white feather into the discard. Appearance and tenacity of purpose win the day.

**Smith Wheels stand unassailable.**



# QUALITY SNAP RINGS

*Inside and Outside  
Snagging Department.  
After rings come from  
foundry and are care-  
fully inspected, they go  
to this department for  
the first rough grinding.*

*More Than  
a Million a Month*



THE *Piston* RING COMPANY  
MUSKEGON, MICH.



**DIETZ  
LAMPS**

## DIETZ "CONVOY" DASH LAMP

*(For Kerosene)*



**T**HE Dietz "Convoy" Dash Lamp combines the three essentials for this type of lamp. First of all, it is a generous and reliable light giver. Second: It is compact in size, fitting snugly against the dashboard and out of the way. Third: It is a fine looking, little lamp—well designed, well made, well finished—suitable equipment for any Motor Truck.

*Our New Motor Lamp Catalog is  
just off the press. Send for a copy*

### **R. E. DIETZ COMPANY**

60 Laight Street

New York

Founded 1840

**JAMES BARNES, Sales Manager, Motor Truck  
Lamp Dept., CARTER BLDG., ROCHESTER, N. Y.**



## Watch the Rowe in Action

Stand aside and critically watch a Rowe Truck in action, with or without a load. For smooth action and reserve power, it has no peer. The Rowe runs as smoothly as a limousine, without swaying or side motion. All the drive is forward, with no loss of power.

Even when the Rowe is empty it does not rattle and jolt as do many other makes, as depreciation is closely guarded against and forestalled by the Rowe design.

The Rowe line includes four models—1 to 1½-2-3-4-5 to 6 ton capacities, which enable dealers to approach any class of truck prospects with the certainty that they can prescribe a Rowe model to meet every trucking need.

A Wisconsin Motor, Zenith Carburetor, Bosch Magneto, Sheldon Axle, Sheldon Springs, Ross Steering Gear and Simplex Governor, are a few of its splendid parts which we mention to convey an idea of its excellent construction.

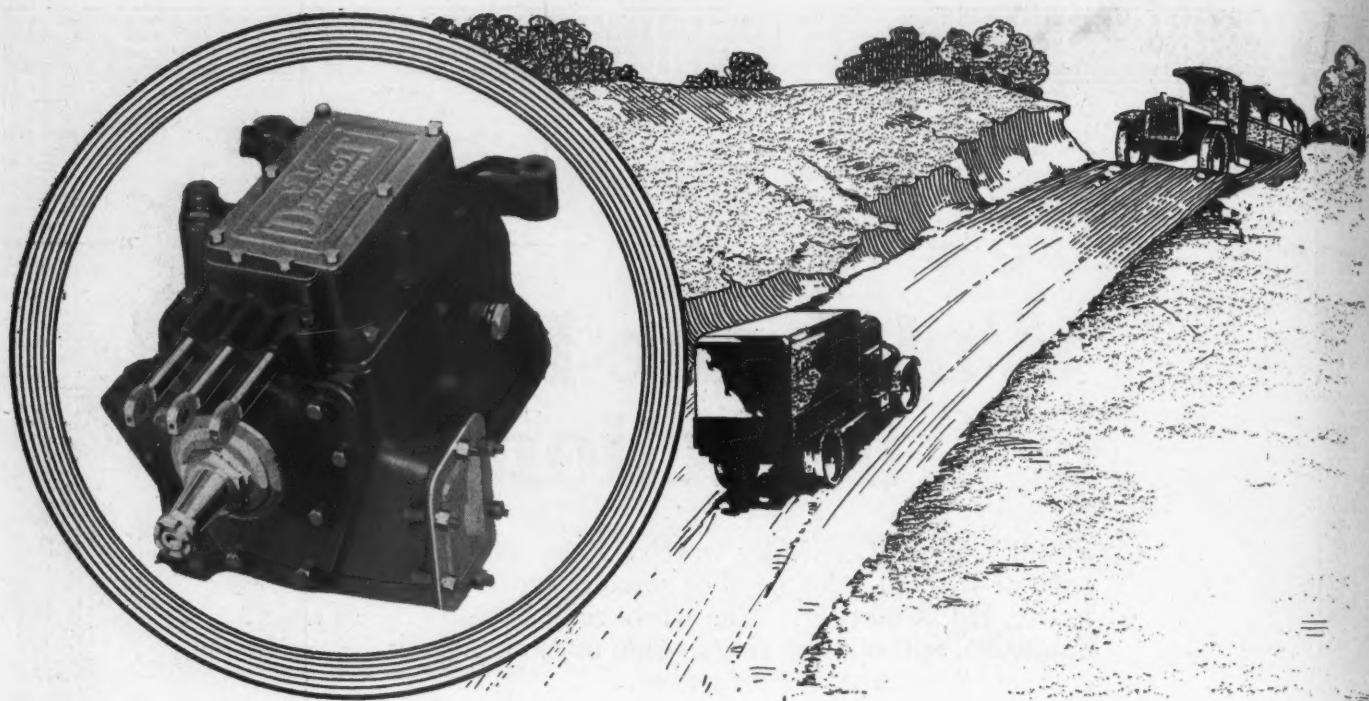
All Rowe models are alike in design and construction, differing only in weight-carrying parts. This enables Rowe dealers to equip truck users with several models of various capacities and to assure them that the cost of maintenance and expense will be lowered considerably because of this uniformity.

A few Rowe dealerships happen to be open now.

If you are interested, write us. We will tell you the Rowe story—how it was the Pioneer Worm Drive Truck of America and all that it stands for today. But to really appreciate the Rowe it is necessary to see it work, to take the wheel yourself and ride in it.

**Rowe Motor Mfg. Co.**  
Lancaster Pennsylvania





## Truck Transmissions Demand Specialization

The reputation of DETROIT TRANSMISSIONS stands upon performance.

Not merely past performance—which is brilliant indeed—but on account of what DETROIT TRANSMISSIONS are accomplishing *now*.

The quality of materials used; the rigid inspections and tests to which, after each operation, every part is subjected; the high ideals which animate the personnel of this organization—are reflected in a quality of product that is flawless in design—strength—service.

This is best accomplished where the entire energies of an organization are concentrated on the production of the best transmission it is possible to build. This means specialization.

That the foremost automotive manufacturers of America share our views regarding DETROIT TRANSMISSIONS is evidenced by the following partial list of our customers.

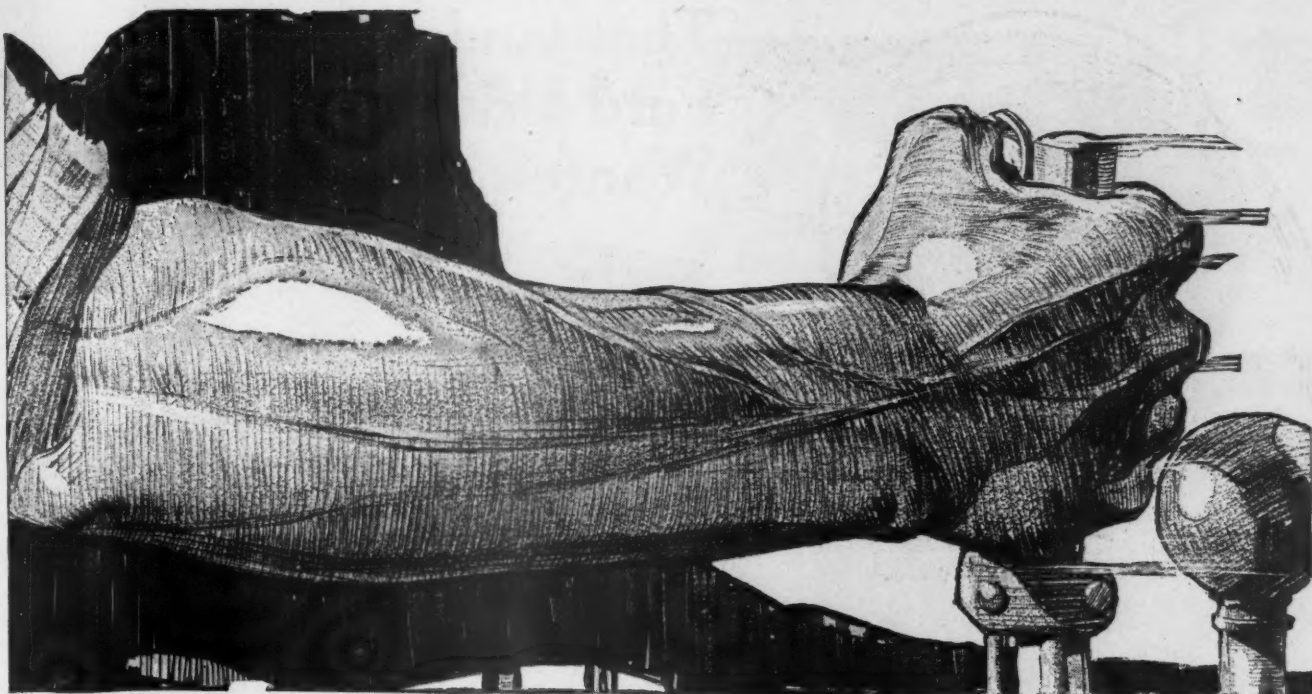
Bethlehem Motors Corp.  
Commerce Motor Car Co.  
Federal Motor Truck Co.

Henry Ford & Son  
Jordan Motor Car Co.  
Liberty Motor Car Co.

Nash Motors Co.  
Templar Motors Corp.  
United States Government

**Detroit Gear & Machine Co.      Detroit, Michigan**

# DETROIT TRANSMISSIONS



# TIMKEN

## TAPERED ROLLER BEARINGS

### Yank!

Yank on the emergency lever! Lock the rear wheels and stand her on end! It's rough on axles and bearings, but it can't be helped!

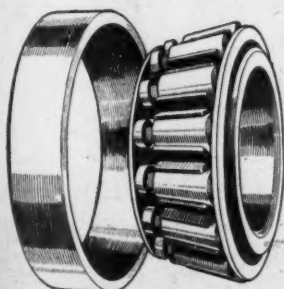
The manufacturer of a good truck looks ahead and sees this sort of thing coming. He knows that there will be rough work, and lots of it; and he builds adequate preparation for it into his product.

The hard service points will have to resist loads and shocks from every direction, and these will eventually cause wear no matter what type of bearing is used.

*The bearing that will give good service must be designed to overcome every difficult circumstance of operation.* It cannot be stuck in as an after-thought—it must be engineered into the job from the start.

The bearing that handles load and shock from any and all directions; that can be adjusted without removal—the Timken Tapered Roller Bearing—meets the ideas and the approval of the men who build 87% of America's trucks.

### At Points of Hard Service



Timken Tapered Roller Bearings are used in the great majority of automotive vehicles at points of hard service:

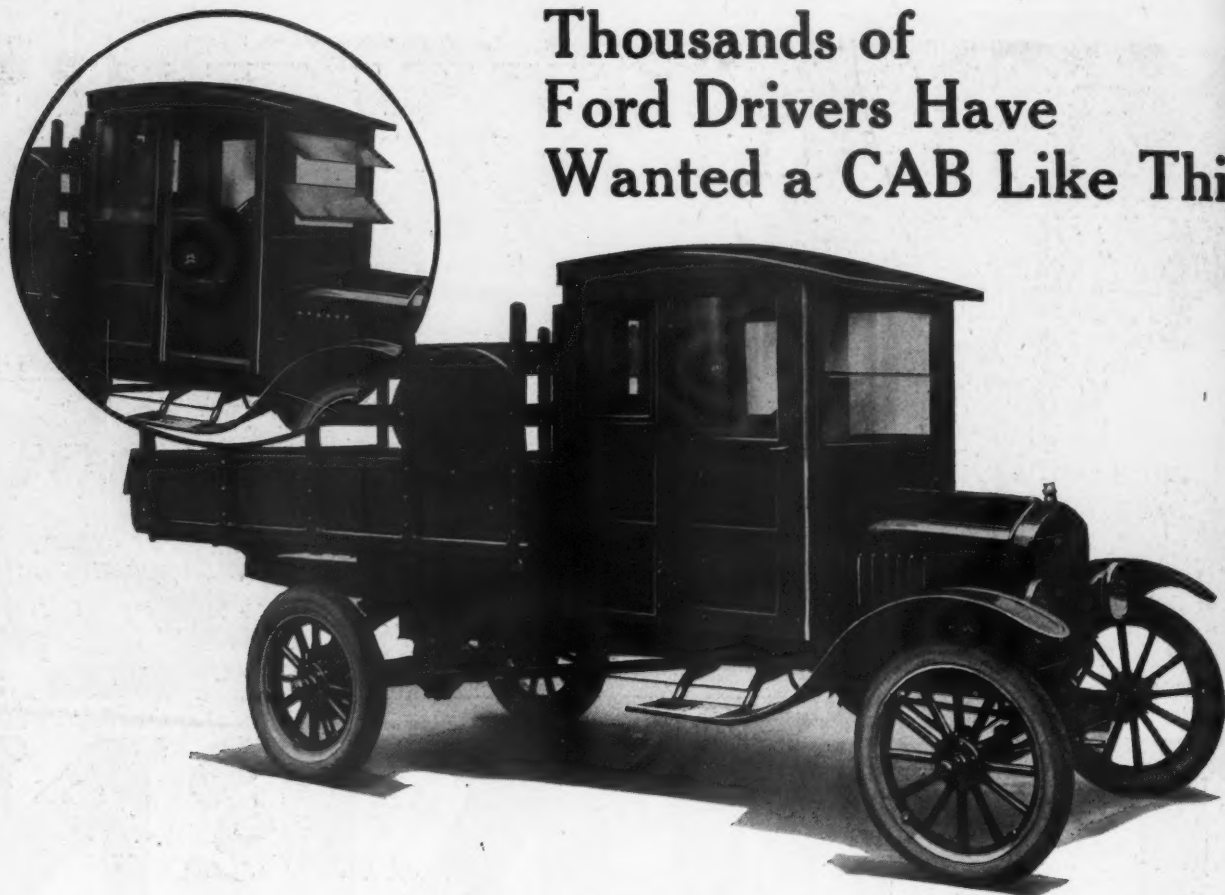
Transmission	Pinion Shaft
Front Wheels	Differential
Rear Wheels	Steering Knuckle
Rear Axle Gears—Worm Gear,	
Internal Gear, Bevel, and Double Reduction.	

This leadership is established on the tapered principle of design, quality of manufacture, performance on the road, and service to the automotive industry.

**THE TIMKEN ROLLER BEARING CO., Canton, O.**

Plants manufacturing complete bearings at  
 Canton, O.; Columbus, O.; Birmingham, Eng.; Paris, France  
 General Offices, Steel, Rolling and Tube Mills, Canton, Ohio  
 Timken Tapered Roller Bearings for Passenger Cars, Trucks, Trailers,  
 Tractors, Farm Implements, Machinery, and Industrial Appliances





Thousands of  
Ford Drivers Have  
Wanted a CAB Like This!

Announcing  
the New  
**BABCOCK VESTIBULE CAB**  
FOR FORDS

Built Strictly According to Babcock Quality Standards of Construction

**Specifications:**

Windshield built in metal frame as one unit—both lights ventilate *in and out*.

Driver's Seat has Spring Cushions, full width Lazy Back, upholstered in imitation leather.

Both Vestibule Doors hinged to swing clear back against side of cab, and are equipped with Ventilator Hooks to hold them open about four inches.

Right Door only has Lock. Left Door is secured by two inside Thumb Buttons to afford access for repairs and ventilation.

Glass in doors and right-hand quarter Window is stationary. Left-hand quarter Window on driver's side swings up and fastens inside against roof.

Windows are of extra depth to give driver maximum field of vision.

Rear Window slides up to give an opening of about 8 inches, and is fastened by Thumb Screws, which prevent rattling.

Constructed to ship **KNOCKED DOWN** in 5 units. Vestibule Doors are hung in frame as a unit, hinges and locks in place—No fitting required. All units go together with steel angles.

Every Cab is first erected, holes drilled and bolts put in place at factory, so a misfit is *impossible*.

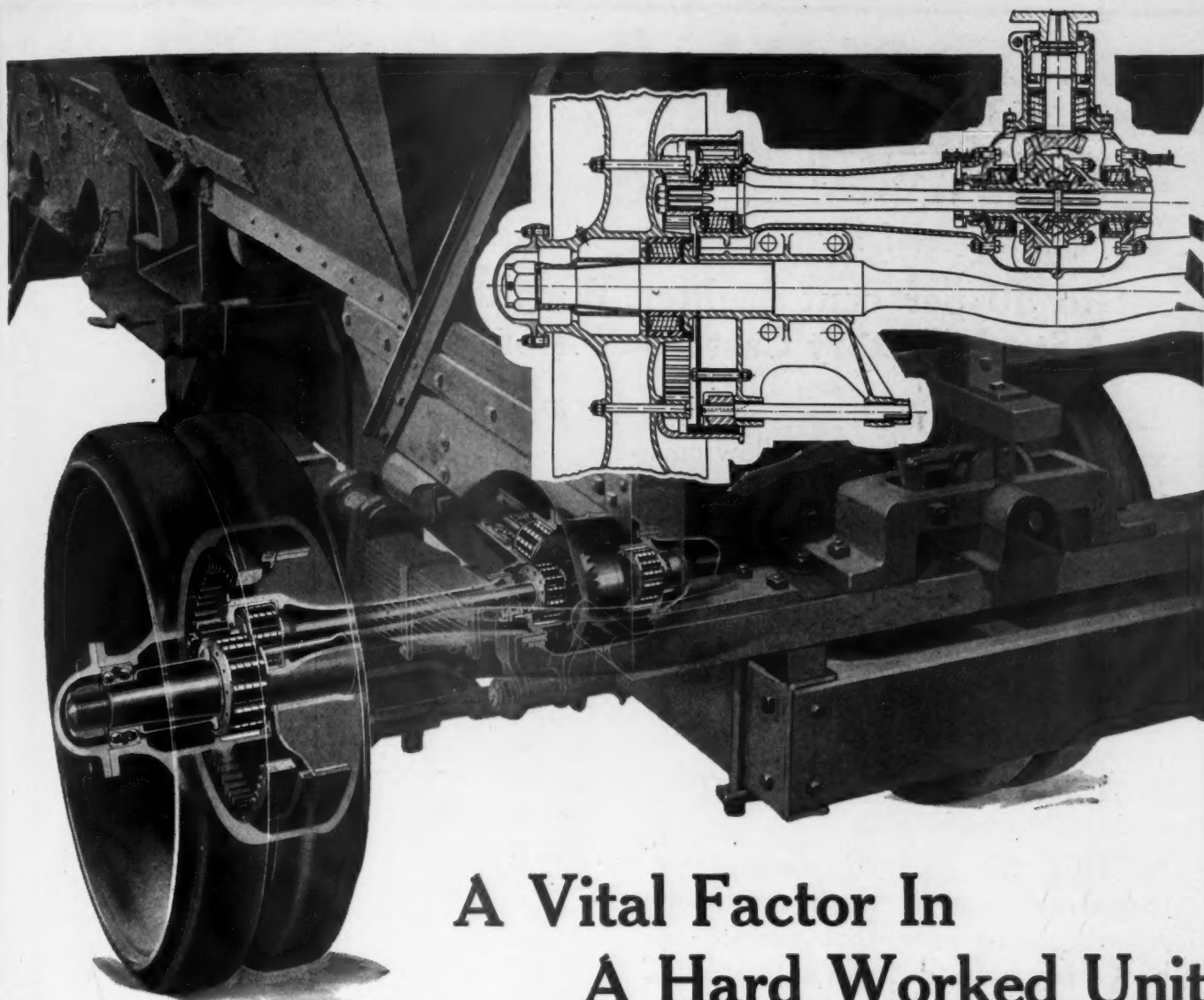
**FINISH:** Green blacked off, or gray with black stripes. Windshield and rear panel black to bottom of window.

**WEIGHT:** About 150 pounds.

*Produced in quantity at popular price*

**Dealers:** The demand for these cabs to replace open cabs and seats will be tremendous during the next few months. Get ready by securing our proposition.

**H. H. BABCOCK COMPANY**  
WATERTOWN,      FOUNDED 1845      NEW YORK.



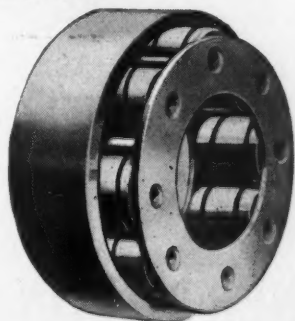
## A Vital Factor In A Hard Worked Unit

### *In Operation*

Hyatt Roller Bearings possess those features which assure proper bearing performance under every condition.

Enduring and non-adjustable they never require attention. Through their self oiling feature the entire bearing surface is adequately lubricated at all times. Their ruggedness and simplicity of construction make them absolutely dependable.

Hyatt Roller Bearings will help to keep your truck always delivering the goods.



This massive five ton internal gear axle is made up of two main parts to perform two main functions. It carries the major share of the total truck weight on a solid bar, and transmits the turning power to the wheels through a separate driving axle.

The bearing installation is consistent with the axle construction. Hyatt Roller Bearings carry the radial load back of the bevel pinion, support the differential on both sides, resist the tremendous tooth load adjacent to the internal gears and carry the greater part of the pounding load on the wheel spindle. Dual purpose ball bearings carry a share of the radial load and absorb all end thrust in both directions at the upper end of the bevel pinion shaft and the outer end of the wheel spindles. It is unnecessary and impossible to adjust any of these bearings, yet full provision is made for the ready adjustment of the bevel gears.

Here may be seen how Hyatt Roller Bearings contribute consistently to the simplicity and ruggedness of this axle design. Their performance in internal gear axles is being demonstrated daily, as completely satisfactory, in all types of service.

**Hyatt Roller Bearing Company**  
Motor Bearings Division      Detroit, Michigan

# HYATT QUIET BEARINGS



# DELUXE

LIGHT WEIGHT GREY IRON PISTON

# DELUXE

"The Successful Light Weight Piston"

**40 to 50 per cent Lighter Weight than Stock Factory Cast Iron Pistons**

This means 40 to 50 per cent less metal to expand, thereby allowing a closer fit in the cylinders—this close fit eliminates the pumping of oil, fouling of plugs and annoying piston slap.

## Look Inside YOU Can't Go Wrong

NOTICE the scientific design, reinforced construction. The heat radiating reinforcement ribs—that radiate the heat away from the head of the piston. This insures a cool running motor. This scientific reinforcement adds strength where strength is needed—across the head and down the skirt. Yet it does not add weight in order to obtain strength.

De Luxe pistons are successfully installed on light connecting rods that were factory-equipped with aluminum pistons. They weigh but a trifle more than the alloy pistons, with none of its faults.

Thousands are daily proving that De Luxe equipped motors make greater oil and gasoline mileage, have more power, more speed, more flexibility, longer life and give entire satisfaction.

*But*



*Specify*

**DELUXE**  
LIGHT WEIGHT GREY IRON PISTON  
"The Successful Light Weight Piston"

FOR ALL MAKES

Automobiles  
Trucks  
Tractors

Aeroplanes  
Motorcycles  
Motorboats

Manufactured by

**CLARK-TURNER PISTON CO.**

12 S. Los Angeles St.

LOS ANGELES

# HIGHWAY TRAILER

EDGERTON  
WISCONSIN

*The Largest Trailer Plant in the World*

## Sell the Trailer These Great Firms Choose

*Many Bankers Now Stipulate the Use  
of Trailers in Financing Truck Sales*

### These Are a Few Large Operators of Highway Trailers

*The U. S. Army      The U. S. Navy*  
Baldwin Locomotive Works  
Philadelphia  
American Telephone & Telegraph Company  
The Cadillac Motor Car Company  
Detroit  
The National Tea Company  
"Piggly-Wiggly" Chain Stores.  
Headquarters, Chicago  
The Timroth Motor Express Company  
Chicago  
Southwestern Telephone & Telegraph Co.  
St. Louis, Mo.  
Towars Creamery Co.  
Detroit  
Chicago Telephone Company  
The T. M. E. R. & L. Interurban Express Co.  
Milwaukee, Minn.  
The Fisher Body Co.  
Detroit  
The Rex Manufacturing Co.  
Connersville, Ind.  
The Public Service Company  
Chicago  
The Timken-Detroit Axle Co.  
Detroit  
Lindeteves-Stokvis Co.  
Amsterdam, Holland  
Dutch East Indies  
Semarang-Serabaya-Batavia  
Tegal-Djakarta-Bandoeng  
Medan-Makassar  
T. E. M. A.  
Buenos Aires-Shanghai

Highway Trailers have established a dominant place in the scheme of modern transportation.

Nothing could emphasize their importance more strongly than the recognition of their economy and efficiency by hundreds of concerns, whose business extends not only throughout America, but in every part of the world.

And now many bankers have endorsed the utility and earning power of the trailer, by stipulating the use of trailers as a condition to financing truck sales.

Every truck in your territory is a prospect for Highway Trailers. The time seems near when every truck sold, will sell one or more trailers.

The quality and construction of Highway Trailers is proved by the fact that it was the only trailer accepted without design change by the U. S. government, which operates more than \$1,000,000 worth.

You can sell the advantages that made Highway Trailers the choice of all these. It is your opportunity to build a big profitable business. Write for details.

### Note Price Advantage of Highway Trailers

1½ Ton \$785	4 Ton \$1325
2½ Ton \$995	6 Ton \$1695



*The Timken-Detroit Axle Company  
Operates a Fleet of Highway Trailers*





## “Time Will Tell”

No truer words have been spoken. No maxim has been more consistently proved. Time *has* told in actual experience, more eloquently than words, the real durability and honesty of all Old Hickory productions.

And today, after the unfailing test of time, Old Hickory Trucks have demonstrated the same dependability, trustworthiness and strength characteristic of all Old Hickory vehicles.

Old Hickory Trucks have been designed by skilled engineers equipped with a first-hand knowledge of road requirements in all sections of the country, executed by master mechanics and sponsored by a responsible, 42-year-old organization.

The exceptional prestige of the name, Old Hickory, is recognized by dealers everywhere.

**Kentucky Wagon Manufacturing Co.**

Incorporated

Louisville, Kentucky

**“OLD HICKORY”**



You buy two things  
in a Truck  
Capacity and Power

THE ability to carry a load and the power to move it sum up all your needs in a truck.

Capacity—sometimes over-rated or over-loaded—means the load that the truck will carry under all conditions of road—usual and unusual.

And capacity, after all, means the axle. There is where the load comes.

Railroad operators know this and have adopted the principle of the load-carrying revolving axle with fixed wheels to give greatest strength to with-

stand the tremendous side strains encountered when taking curves at high speed.

This is the principle of Sheldon Worm Gear Axle. Technically it is known as "semi-floating." In reality it is the principle employed in carrying the Freight Tonnage of the World. When you buy a truck you are buying capacity; therefore you should study the axle. You can get a Sheldon-equipped truck of every size from 1/2 to 5 ton capacity, and for every purpose.



The Sheldon Worm Gear Axle is the only one that can be run free or held rigid.

SHELDON AXLE AND SPRING COMPANY, Wilkes-Barre, Pa.

Manufacturers of Sheldon Axles for Motor Trucks and Sheldon Springs for Trucks and Automobiles.

# Sheldon FOR Axle MOTOR TRUCKS

BUILT ON THE LOCOMOTIVE PRINCIPLE

WHILE Sheldon advertising is influencing opinion, Sheldon Axles are daily confirming it. It pays then, to equip your trucks with the axle that truck buyers know and believe in.



# KEEP ON!

Were you ever driving an automobile when the "Traffic Cop" said "Stop!" and have your motor stalled? Wasn't it aggravating to see the smiles on the faces of other drivers as they passed you by when the cop said "Go"?

You know that it's more costly to stop and start a motor than it is to keep it running.

Experienced executives know that advertising resembles a motor in this respect. A haphazard campaign, conducted sporadically is a luxury. It often costs more than it is worth, while consistent effort pays increasing dividends in profits and good-will.

It is damaging to the morale of your sales organization to stall your advertising because of temporary conditions such as freight embargoes or under-production. It's a healthy sign of success when you can't fill your orders. Instead of canceling your advertising keep right on, for human memory is short and the man in the spot-light gets the attention every time. If your message is not before the trade your competitors have an open road to your customers' favor.

It is only by constant repetition that you can hope to reap the rewards of successful advertising. Above all, courage is demanded. Once you have determined on a trade advertising campaign, hew to the line with it. The impression which your continuous efforts makes on the trade is one of dependability and faith. Those who do not sincerely believe in advertising trim their sails to every passing breeze of expansion or deflation. Successful advertisers stay on the course.

Keep your advertising before the trade in trade papers as consistently as you keep your sign over the place of business. Continued advertising in the COMMERCIAL CAR JOURNAL, AUTOMOBILE TRADE JOURNAL, CHILTON TRACTOR JOURNAL, CHILTON TRACTOR INDEX and the CHILTON AUTOMOBILE DIRECTORY, will convince the trade of your right to leadership. *Keep on!*



# STEEL CASTINGS

**OHIO Steel Castings are made to stand up** under the terrific abuse which every truck and trailer gets.

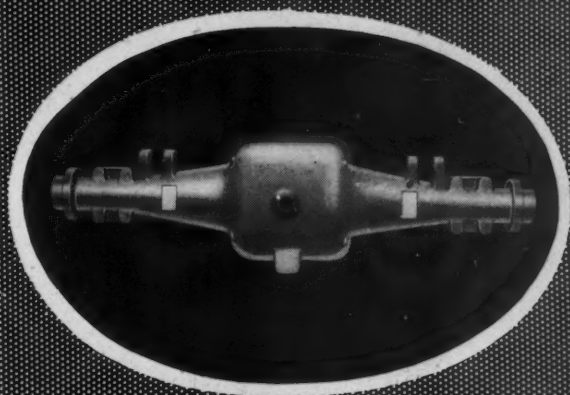
Our Springfield Plant is devoted exclusively to small castings. It is under the supervision of men who know how to cast small parts in large quantities, without sacrificing quality.

This experience, the best foundry equipment—electric steel, electric annealing, and critical inspection—all make OHIO steel castings the standard for trucks and trailers.

Send blueprints, specifications and delivery requirements for immediate quotation.

**The Ohio Steel Foundry Company**  
Springfield, Ohio

*Large Castings made in our foundries at Lima and Bucyrus, Ohio*



Rear Axle Housing for the Ahrens-Fox Fire Engine Company, Cincinnati, Ohio

# WOLVERINE

**1½ and 2 TON TRUCKS**

## The Winning Sales Argument

The trump argument that wins sales for the Wolverine Dealer is the very same point that wins us dealers, viz: The triumphant record of Wolverine truck performance.

We want to show you just how completely this mechanically perfect truck has been satisfying dealers and their customers over a continuous stretch of years. We want to submit to you the proof that this brute of a truck operates at a lower cost per ton-mile than you ever knew before.

In cold black and white, we want to present you with the figures that prove the Wolverine is the unusually profitable proposition we claim for it.

*Send for the Proof—NOW!*

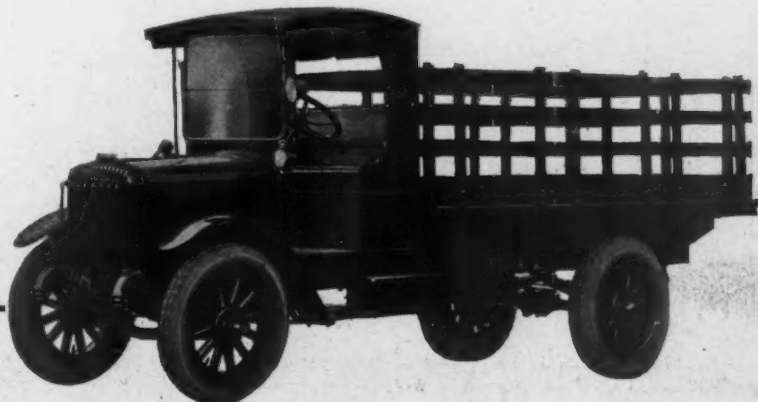
**The American Commercial Car Co.**

Gratiot Ave. and Detroit Term. R. R.

Detroit, Michigan

### Approved Units

Rugged Continental Motor that supplies abundant power at least cost. Dependable Lighting and Ignition System. Special Wolverine Cast Shell Radiator. Powerful Russel Internal-Gear Drive Axle. Heavy drop-forged front axle, equipt with Timken bearings. Irreversible worm and gear Steering Gear. Selected heavy 5" Steel Channel Section Frame. Heavy-duty artillery-type wheels. Wheel-base, 140".





# TRAGESER TANKS

## Flat Head Gravity Tank for Trucks Tinned by Hot Process

The inside and outside tinning of this No. 16 gauge steel Gasoline Tank is expertly done by the hot process—which insures a perfect coating.

The seams are welded—not soldered or riveted—and make tight joints that *stay* tight. The filler cap is brass.

Under the watchful eyes of carefully trained inspectors each tank is tested by air pressure under water—which explains why we unqualifiedly guarantee our Tanks to be absolutely tight.

Have your tanks made the TRAGESER WAY—right. Send your blueprints.

**John Trageser**  
Steam  
Copper Works  
447-457  
West 26th St.  
New York, N. Y.



Tappings  
Made as  
Desired

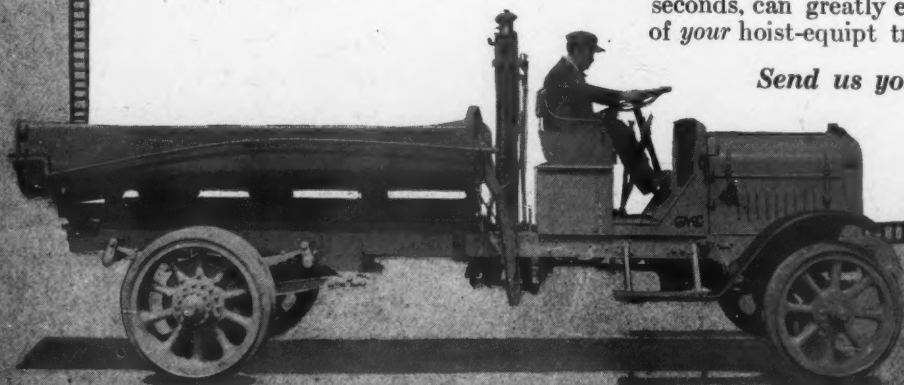
## VERTICAL or OBLIQUE HYDRAULIC HOIST

### Occupies Only a Few Inches of Space

The heavy-duty Vertical Hydraulic Hoist pictured takes up only 14 inches of space. Note the trim, compact, distinctive appearance of the entire assembly. That is because every Hydraulic Hoist is specially designed to become an integral part of the particular chassis it serves.

Why not learn in detail how this high-efficiency Hoist, that dumps a 5 ton load in 30 seconds, can greatly enhance the salability of *your* hoist-equip trucks.

*Send us your blueprints*

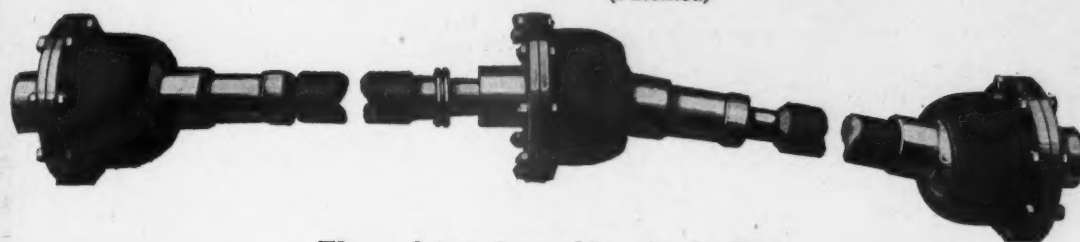


**HYDRAULIC HOIST  
MFG. COMPANY.**  
292 WALNUT STREET  
ST. PAUL, MINN.

**Powerful: Strong: Enduring:**

# "M & E" UNIVERSAL JOINTS

(Patented)



*Three Joint Assembly—Angle Drive*

**TWO and  
THREE JOINT  
ASSEMBLIES**

**Made in  
FOUR SIZES  
Up to 60 H.P.**

**SPECIFICATIONS:** 1—Simple Construction. 2—Few Parts. 3—Very Large Bearing Surfaces. 4—Hardened and Ground Pins and Bushings. 5—Tough Steel Forgings. 6—Dust-proof Housing.

*Our Engineering Department Will Fully Meet Your Requirements*

## "M & E" GREASE CUPS

(Patented)

The tops cannot rattle off from vibration or jars usual in motor car duty. Dirt, grit and dust will not get into the grease. Insure the lubrication of your car by using the "M & E" Grease Cups. Samples on request.

## MERCHANT & EVANS CO.

NEW YORK PHILADELPHIA WHEELING  
BALTIMORE LANCASTER, PA. CLEVELAND  
ATLANTA DETROIT  
KANSAS CITY

# WHICH KIND DO YOU USE ?

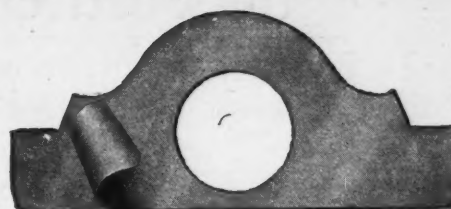


Are you still worrying with these greasy, tricky little trouble makers?

**LAMINATED SHIM COMPANY**

**DETROIT: Dime Bank Building**

**ENGLAND: R. A. Rothermel, 24-26 Maddox St.; Regent St., London, W. I.**



Laminated shims of Laminum—you "peel 'em down to fit"—have made bearing adjustments quick and accurate. Once tighten up on a laminated shim and you'll be off the other kind for life.

**47 W. 34th Street, New York**

**ST. LOUIS: Mazura Mfg. Co.**

# LAMINUM for SHIMS



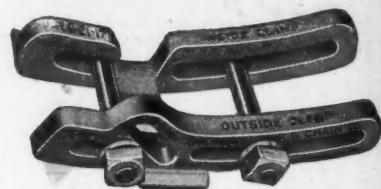


No. 37. Prest-O-Grip Dual Clamp

The standardized line of traction chains for all solid tire wooden wheel trucks with clearance for any anchored equipment. Can be sold by tire sizes of trucks, no other information needed.

## Introducing the Latest Addition to the Prest-O-Grip Line

The first really universal clamp, fitting more trucks than any other device on the market. With this one size, 321 different trucks can be equipped with chains for traction purposes.



Made by

**The Rowe Calk and Chain Company, Plantsville, Conn.**

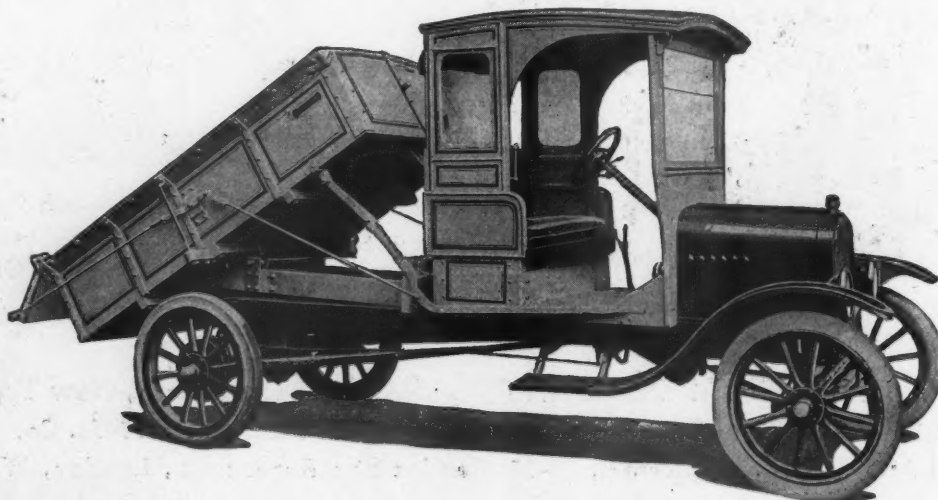
Prest-O-Grip  
Spoke Clamps

Prest-O-Grip  
Traction Chains

Prest-O-Grip  
Lock Links

Hi-Lo  
Jacks

## Jennings Patent Automatic Dump Body for Ford One-Ton Truck



The above illustration shows the Jennings Patent Automatic Dump Body mounted on a Ford Ton Truck. Capacity of Body, 1 1/4 Yards.

This is no experimental proposition; hundreds in use and all users loud in their praise.

No expensive hand or hydraulic hoist required to dump this Body; dumped by hand lever and load released in ten seconds.

**THE COLUMBIA WAGON COMPANY**

Automatic locking device that holds body from dropping back. Not a piece of cast or malleable iron on job; all wrought iron, which can easily be replaced, if ever broken, by any blacksmith. Also built for Reo, Maxwell, Oldsmobile, International, Auto Car, and other makes of chassis in sizes from 1 1/2 yards to 3 yards capacity.

Write quickly for agency proposition.

**Drawer B**

**COLUMBIA, PA., U. S. A.**

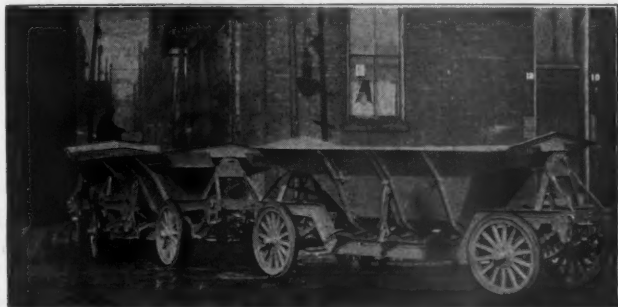
# LEE LINE

Trailers—Bodies—Loaders

## Drop Frame Trailers



Brings the loading edge within easy reach. Reduces lifting height from 18 to 30 inches. Saves time and energy.



A low center of gravity eliminates sidesway due to rough and uneven roads and limits danger of overturning when rounding corners at high speed. Lengthens life of equipment.



Equipped with a Lee Automatic Side Dump Body, provides an efficient vehicle for anyone with loose materials to haul. Especially suited to stone and gravel hauling and for collection of ashes and garbage by municipalities.

Chassis also provided with platform, stake or panel body for hauling any kind of merchandise.

*If it is a Trailer, Semi-Trailer, Motor Truck or Trailer Body, or special handling or hauling equipment—we make it.*

### LEE LOADER & BODY CO.

Builders of Automotive Auxiliary Equipment  
2333 So. La Salle Street Chicago



## "NORMA" PRECISION BALL BEARINGS (PATENTED)

Quality seeks quality. Which explains why "NORMA" Bearings are standard in all magnetos and lighting generators of the better class—and also why "NORMA" equipped magnetos and lighting generators are standard equipment on all cars, trucks, tractors and power boats built to a quality standard and sold on a quality basis.

*See that  
your electrical apparatus  
is "NORMA" equipped*

### THE NORMA COMPANY OF AMERICA

Anable Avenue  
Long Island City  
New York



Ball, Roller, Thrust and Combination Bearings





# LARRABEE TRUCKS

## "300 Days' Service"



That is what a user wants. He looks to the dealer for service. When a dealer talks (blank) motor; (blank) drive; (blank) axles to a prospect, he sells most any truck—when he talks SERVICE, he sells a LARRABEE.

Larrabee Service gives a user just what he expects in a truck.

DEALERS: Negotiate now for the Larrabee franchise for your territory. Write us for the plan.

### DEALER SPECIFICATION INFORMATION

1½—2½—3½—5 Ton Chassis

Continental Red Seal Motor; Sheldon Axles; the David Brown System of Worm Gearing; Hotchkiss Worm Drive; Merrill Bros. Springs; Brown-Lipe Transmissions and Clutches; Ross Steering Gears and Larrabee Oilless Bushings.

LARRABEE-DEYO MOTOR TRUCK CO.  
Binghamton, New York

# Pressed Steel Frames

The largest and best equipped  
Frame plant in the world

**A.O. SMITH CORPORATION**  
**MILWAUKEE**

Detroit Office: 708 Ford Building



**ASBESTOS PRODUCTS**

- Packings**
- Locomotive Throttle and Air Pump Packings
- High Pressure Piston Packings
- Valve Stem Packing
- Medium and Low Pressure Packings
- Perfect Valve Rings
- Flax Packings
- High, Low and Medium Pressure Sheet Packings
- Gaskets and Gasketing Material
- Asbestos Wick and Rope
- Asbestos Cement
- Asbestos Automobile Specialties**
- Brake Lining
- Transmission Lining for Fords
- Cone Clutch and Disc Clutch Facings
- Asbestos Spark Plug Yarn
- Asbestos Textiles**
- Cloth Yarn Cord
- Carded Fibre Braided Tubing



Garco Transmission Lining for Ford Cars



Garco Gasket Roll

**GARCO**  
ASBESTOS  
BRAKE LINING

**G**ARCO stops the buyer the way it stops his car. It holds business the way it holds brakes. It is safe for the dealer to carry because it is safe for the driver to use. GARCO plays a sweet tune on the cash register.

And all because GARCO is made with a generous margin for safety and long wear—extra strong, durable, dependable. Its *solidly woven* construction is possible only through the extra heavy looms that weave it. Its natural compactness and multi-wire reinforcement give it a holding and wear-resisting power that is as effective when worn to wafer-thin thickness as when newly applied.

Your conscience will never trouble you when your recommendation is GARCO. We'll help you on the selling end. Write for proposition—whether dealer, repair shop, or jobber.

**GENERAL ASBESTOS AND RUBBER CO.**

Main Office and Factories  
CHARLESTON, S. C.

Branches and Complete Stocks  
58 Warren Street, New York  
14 North Franklin Street, Chicago  
311 Water Street, Pittsburgh

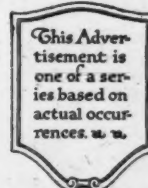


**Oakite Cutting Compound**  
*Leaves Drills Cleaner and Cooler*

**T**HIS AUTO FACTORY has recently adopted Oakite Cutting Compound as standard for all cutting and grinding work, because greatly improved results are obtained.

A specific instance of Oakite Compound performance in this plant is cited in connection with the drilling of drop forged connecting rods with high speed heavy duty equipment.

These rods are constructed of manganese steel, and it was found impossible to avoid the rusting of work with the compound formerly used; whereas with the Oakite Compound there is not a trace of rust on any of the parts.



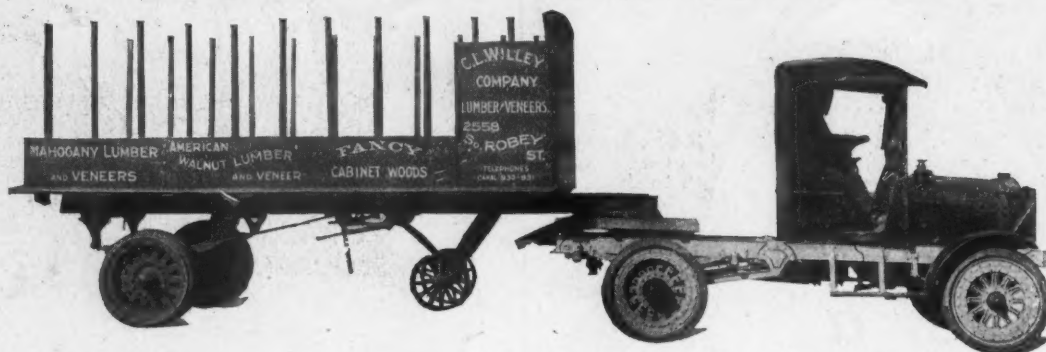
And the drill operators *prefer* the Oakite Compound because it leaves the rods cleaner and cooler—hence improves working conditions.

*May We Serve You, Too?*

**OAKITE**  
MANUFACTURED BY  
**OAKLEY CHEMICAL CO.**  
38 THAMES STREET, NEW YORK



Couples  
Instantly  
Without  
Use of  
Jacks



Trailer  
Brakes  
Operate  
From  
Driver's  
Cab

## WHEN YOU SELL LAPEER TRAILERS

you sell *continuous satisfaction*. Your customer obtains the most economical hauling equipment in existence, and re-orders from these customers are sure to come to you, as Lapeer performance cannot be duplicated.

Sell the Lapeer Trailer; it is far the most efficient and highly developed transportation unit. Desirable exclusive territory remains open. Write for proposition.

LAPEER TRAILER CORPORATION, Manufacturers

General Sales Office

M. E. RYAN, 2807 Michigan Avenue, Chicago

# Cold Rolled Strip Steel

## IMMEDIATE SHIPMENT

The Hogan Stock of Cold Rolled Strip Steel is large and complete, and contains the correct tempers for all manufacturing purposes. Make use of it.

**JOHN R. HOGAN**  
*Alloy Carbon and Cold Finished Steels*  
 237 NORTH 6th STREET, PHILADELPHIA



## The Window of Your Battery

Only through the little ammeter on the dash can you see what is going on in your battery, hidden away under the floor or seat of your car.

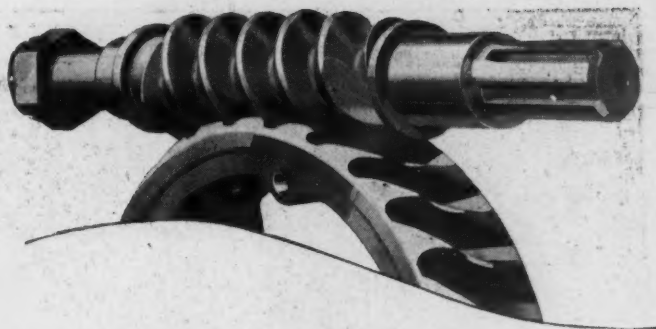
Is the generator charging properly? The ammeter tells the answer. Is there a short circuit? The ammeter gives a warning. Whether things are right or wrong, the ammeter tells at a glance.

It isn't enough, however, that there be simply an ammeter on the dash. It must be one that is dependable and accurate for any other kind is worse than none.

That's why more and more cars carry Westinghouse Ammeters. They tell the *truth*.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY  
Automobile Equipment Department  
General Sales Office: New York City, 110-114 West 42nd Street  
Branch Sales Offices: Cleveland, Ohio, 1900 Euclid Building;  
Indianapolis, Ind., City Trust Building; Detroit, Mich., Kresge Building; Chicago, Ill., Conway Building  
Works: Newark, N. J., and Springfield, Mass.

**Westinghouse**  
ELECTRICAL EQUIPMENT FOR AUTOMOTIVE VEHICLES



## The Final Drive That Stands Up

**T**HE use of the worm gear drive grows and grows because it is the most desirable and satisfactory form of final drive for motor trucks.

It is the most efficient—97% efficient; it is the *quietest*; it is the most *compact*; it is the *simplest* and the *easiest* to lubricate perfectly; and it is the longest lived. A good worm gear stands an enormous amount of grief without showing any signs of wear.

Therefore, when quality, service and final efficiency govern, the worm gear drive is the choice.

And, because of correct design, fine workmanship and materials, "*Cleveland High Efficiency*" Worm Gears are more and more specified and used.

Do not forget that our engineering department, specializing exclusively on worm gearing, is at your service. Write.

## The Cleveland Worm Gear Co.

"America's Worm Gear Specialists"

Cleveland, Ohio, U. S. A.

C. F. Quicke & Co.  
315 Euston Rd., London, N. W.

Alfred H. Coates Co.  
41 Spear St., San Francisco, Cal.



**Cleveland**  
**WORM GEARS**  
OTHER GEARS WEAR OUT. THE WORM GEAR WEARS IN.



# ANNOUNCEMENT

AUGUST 1st will see us completely installed in our new plant, with 200,000 square feet of floor space and greatly improved facilities. This entire plant will be devoted to the manufacture of

## HARTFORD UNIVERSAL JOINTS AND CONE CLUTCHES

and better enable us to take care of our rapidly expanding business.

Due to the perfection of our organization our June shipments were 33 1/4% greater than any previous month in the history of the company and with still greater coordination and cooperation in all departments we shall continue to live up to the reputation established for the

Joint of Universal Satisfaction

HARTFORD AUTOMOTIVE PARTS CO., HARTFORD, CONN.

## For Service and Appearance



Sheet Metal Parts that receive careful consideration from buyers are selected on the basis of quality and style. The tendency is becoming more marked for motor truck makers to select

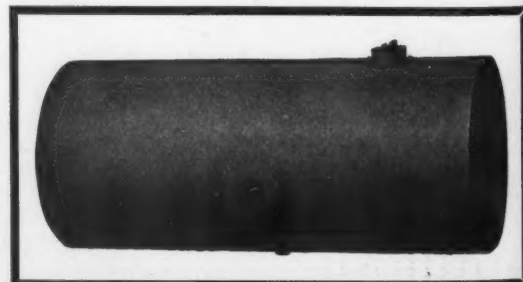
## Sheet Metal PARTS

with the care and attention they deserve. Our Acetylene-welded Tanks, Fenders, Sod Pans, and Stampings are sturdily constructed to last with built-in quality that resists wear.

You can secure this certainty of quality and pleasing appearance as well at prices that are surprisingly reasonable. Consult us about Hoods, Fenders, Tanks, etc. We can satisfy you as to quality, deliveries and price.

**Motors Metal Mfg. Co.**

Milford Ave. and P. M. Ry. Detroit, Michigan



## Equip!—or Lose Out to Conditions

There's less spending on new trucks, and more saving on old ones, than in many a recent year; the truck not equipped with a Hub Odometer simply isn't rigged up for these days.

Business tightens its belt for a turn at economy, and the business of haulage cannot practice economy without Odometers to tell costs-per-mile, and what items permit of reductions.

On forty-two makes of trucks the

**Veeder**  
**HUB ODOMETER**

is standard equipment, and on others it is *timely* equipment in the race where the fittest survive.



Carry economy right through by getting an Odometer mechanism that will stand—the one used as standard equipment by forty-two truck manufacturers. The Veeder mechanism is copied, but Veeder workmanship and mechanical integrity is not. Compare the works!

*The Veeder always adds mileage, whether truck runs forward or backward; totals cannot be falsified. Regular model adaptable to all standard trucks, \$20.00. Special FORD truck model, \$15.00. Brief literature on request.*

**The Veeder Mfg. Co.**

10 Sargeant Street Hartford, Conn.

New York Distributor

Joseph T. Quinlan  
5 Columbus Circle

Detroit Distributors

Geo. F. Balk Sales Co.  
9 Selden Street

Chicago Distributors

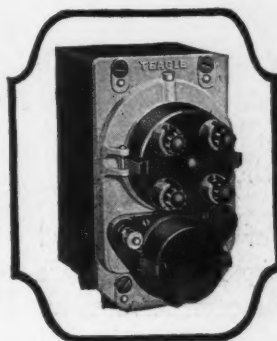
Carey G. Wirick & Co.  
564 W. Randolph St.

California Distributors

F. Somers Peterson Co.  
57 California St., San Francisco, Cal.

Philadelphia Distributors

Crown Auto Specialties Co.  
1611 Vine Street



—Columbus called for an egg; passed it among the guests, asking them to make it stand on end. They being unable to do so, he gently broke the end—causing it to stand upright. The guests exclaimed it was a simple thing to do. "Yes," replied Columbus, "It was only necessary to have thought of it."

"The Egg of Columbus" passed into a proverb—meaning anything we cannot do and yet find extremely simple when shown.

## SIMPLICITY

Is the Secret of Efficiency

JUST as simple is the construction of the Teagle Magneto. Any mechanic can dismantle, rebuild and re-install the Teagle Inductor-Type Magneto in three hours.

NO—moving wires, slip rings, moving windings, contact brushes. Stationary coil mounted as a unit. The only moving parts are the laminated iron rotor, distributing gears and distributing arm.

**SIMPLICITY-RUGGEDNESS**  
**EFFICIENCY-ECONOMY**

Always associate these Qualities with

**TEAGLE**  
**MAGNETO**

A FAT, HOT SPARK



THAT LIGHTS YOUR CIGAR



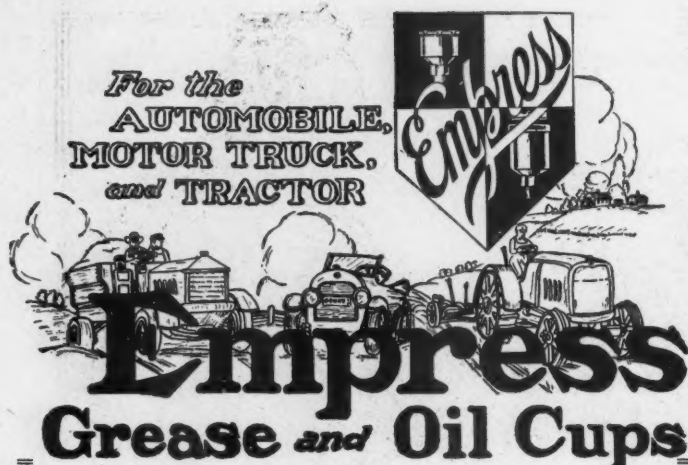
CONFORMS TO S.A.E. STANDARDS

THE TEAGLE COMPANY CLEVELAND, O.



You want to know more about this *simplest* magneto—  
Write 1127 Oregon Avenue for details





### Standard Equipment, for Years on Most American Built Motor Trucks

Empress Grease and Oil Cups are honestly built to withstand the racking conditions of motor truck service, their sturdy design enables them to take hard knocks without damage.

Made from the best grade of brass and steel by skilled workmen and designed by engineers of broad experience in the automotive field, they provide a better lubricator; serviceable and dependable—always.



#### Empress No. 52 Oil Cup

This cup is easily operated from any direction with the oil can spout. The flip cover is self-closing and absolutely dust proof. It is very strong and well made, and has an attractive appearance when in position. Made in eight sizes:  $\frac{5}{16}$ ",  $\frac{3}{8}$ ",  $\frac{7}{16}$ ",  $\frac{1}{2}$ ",  $\frac{5}{8}$ ",  $\frac{3}{4}$ ",  $\frac{7}{8}$ " and  $1\frac{1}{8}$ " diameter of Hex. Nickel plated or polished brass finish. The  $\frac{5}{8}$ " size is also made from steel.

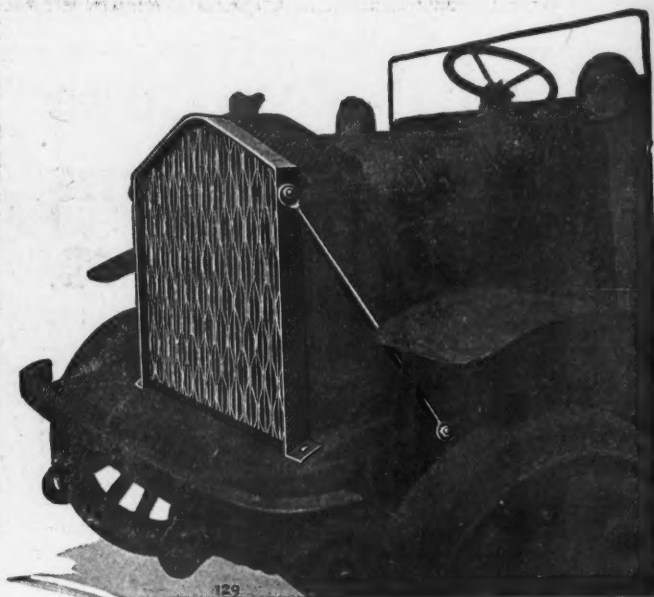
**WRITE FOR CATALOGUE F—TODAY**  
*It Shows Other Styles Equally Good*

## BOWEN PRODUCTS CORP.

AUBURN DIV., AUBURN, N.Y. MINNEAPOLIS DIV., MINNEAPOLIS, MINN.  
WINKLEY DIV., DETROIT, MICH. ZERK DIV., CLEVELAND, OHIO  
Canadian Factory—CANADIAN WINKLEY CO., LTD., WINDSOR, ONT.

#### SALES OFFICES:

NEW YORK, 220 BROADWAY CHICAGO, 1607 OTIS BLDG.  
BOSTON, 253 FRANKLIN ST. CINCINNATI, 409 LYRIC BLDG.  
SAN FRANCISCO, MONADNOCK BLDG.



## IRVING SAFETY RADIATOR GUARD

### *For Uninterrupted Service*

Accidents cost far more in loss of service than in actual repair expense. Continuous service—that's the key to maximum profit in truck transportation. An **Irving Guard** will give you real, dependable radiator protection. It will withstand shocks that would wreck any ordinary guard in which one member must bear the brunt of a blow. In the **Irving Guard**, the resistance of the whole panel is opposed to a blow or pressure at any point, and the shock is distributed. That means radiator safety.

There's a size and style to fit your truck. Write for Circular 1B36, giving your make and model

**IRVING IRON WORKS CO.**  
LONG ISLAND CITY, N.Y., U.S.A.

Manufacturers of

**IRVING SUBWAY** TRADE MARK  
(PATENTED) REG. U.S. PAT. OFF.  
THE FIREPROOF VENTILATING FLOORING

# LUEDINGHAUS QUALITY MOTOR TRUCKS



Model K—2 Ton Capacity

## SPECIFICATIONS THAT MEAN POWER

**MOTOR:** Waukesha, 4 cylinders, 4 $\frac{1}{4}$  in. bore x 5 $\frac{1}{4}$  in. stroke. Patented governor.  
**COOLING:** Gear-driven centrifugal pump. Brass water connections.  
**RADIATOR:** Built up type. Oversized.  
**CARBURETOR:** 1 $\frac{1}{4}$  in. Schbler. Government type.  
**TRANSMISSION:** Detroit. Three speeds forward, one reverse.

**FRAME:** Pressed steel. Flexible.  
**WHEELBASE:** Standard, 145 in.; Long Standard, 170 in.; Tractor, 112 in. or over.  
**FRONT AXLE:** Oversized, drop-forged, I-beam with Timken roller bearings.  
**REAR AXLE:** Wisconsin. Worm Drive, semi-floating type. Special alloy steel shafts.  
**BRAKES:** Two distinct systems.  
**RADIUS RODS:** Steel I-Beams.

**STEERING GEAR:** Adjustable worm and nut type.  
**SPRINGS:** Tuthill Titanic. Electric furnace alloy steel.  
**WHEELS:** Artillery. Second growth hickory.  
**TIRES:** Solid. Front, 36 x 4 in.; Rear, 36 x 7 in. Pneumatic: Front, 36 x 6 in.; Rear, 40 x 8 in.  
**EQUIPMENT:** Two side and one tail lamps. Stewart & Warner speedometer, bumper, seat, cushion, horn, jack and tools, 18-gal. gas tank.

*DEALERS Wanted in Territory Not Already Represented*

BUILT BY

## LUEDINGHAUS-ESPENSCHIED WAGON COMPANY

Established 1843

SAINT LOUIS, MISSOURI

# DROP FORGINGS

Open Hearth or Alloy Steel

Capacity, 1,800 Tons Per Month

## TYPICAL TRUCK FORGINGS

CHANGED MONTHLY

STEERING KNUCKLE, 28 LBS.



STEERING KNUCKLE, 39 LBS.



BRAKE SHOE, 30 $\frac{1}{4}$  LBS.



AXLE SPINDLE, 42 LBS.



STEERING KNUCKLE, 35 LBS.



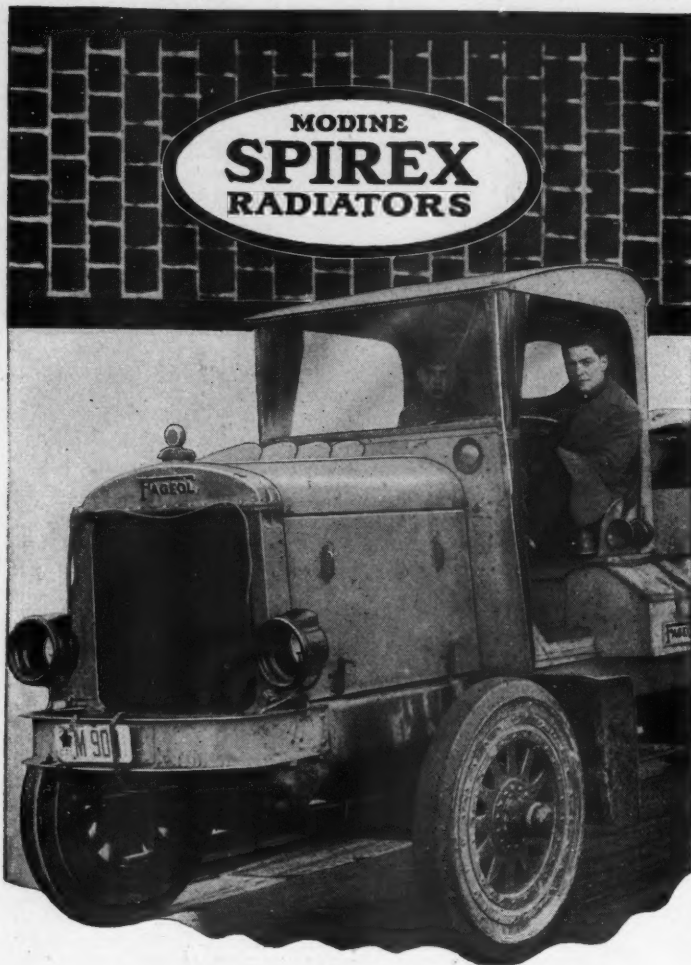
## MACHINE-FINISHED CRANK SHAFTS

Heat-Treating and Complete Laboratory Equipment

## UNION SWITCH & SIGNAL COMPANY

SWISSVALE, PA. (2 Miles East of Pittsburgh)





## Building Quality Into the Truck

It is a mark of quality—superior quality—in a motor truck to have it equipped with a Modine SPIREX Radiator.

And an ever growing number of leading truck manufacturers are coming to use the SPIREX exclusively, because of its proved greater cooling, greater strength and lighter weight.

It is the patented core construction of the SPIREX—which cannot be used by other radiator makers—that gives it these advantages.

A small piece of copper, shaped into a spiral, is placed within each air cell. It has contact with the water channel throughout its length. Therefore, it adds wonderfully to the reinforcing strength of the radiator.

Most important of all, it gives the air passing through the cells a whirling motion. Besides, it slightly retards its passage. Thus, the air is held against the water channels stronger and longer than in ordinary radiators, enabling it to pick up and carry away more heat.

Our interesting booklet, "The SPIREX for Trucks," tells more about this better radiator. Send for a copy.

**MODINE MANUFACTURING COMPANY**  
Racine, Wisconsin

F. SOMERS PETERSON CO., San Francisco, Cal.

## "JASCO" SAFETY FIRST TANK

WHEN you see a "Jasco" Tank on a car you can recognize it at once as a *quality car*.

That the manufacturer is buying the best that can be had—a tank which can't leak, a tank which "stands up" strongest where service is hardest. A tank that means lasting service, positive protection and greater fuel economy.

Made of seamless drawn steel, tested and proved—perfect in every detail of construction. Send for booklet and detailed information.

We are prepared to handle contracts for deep drawn steel work. Send specifications.

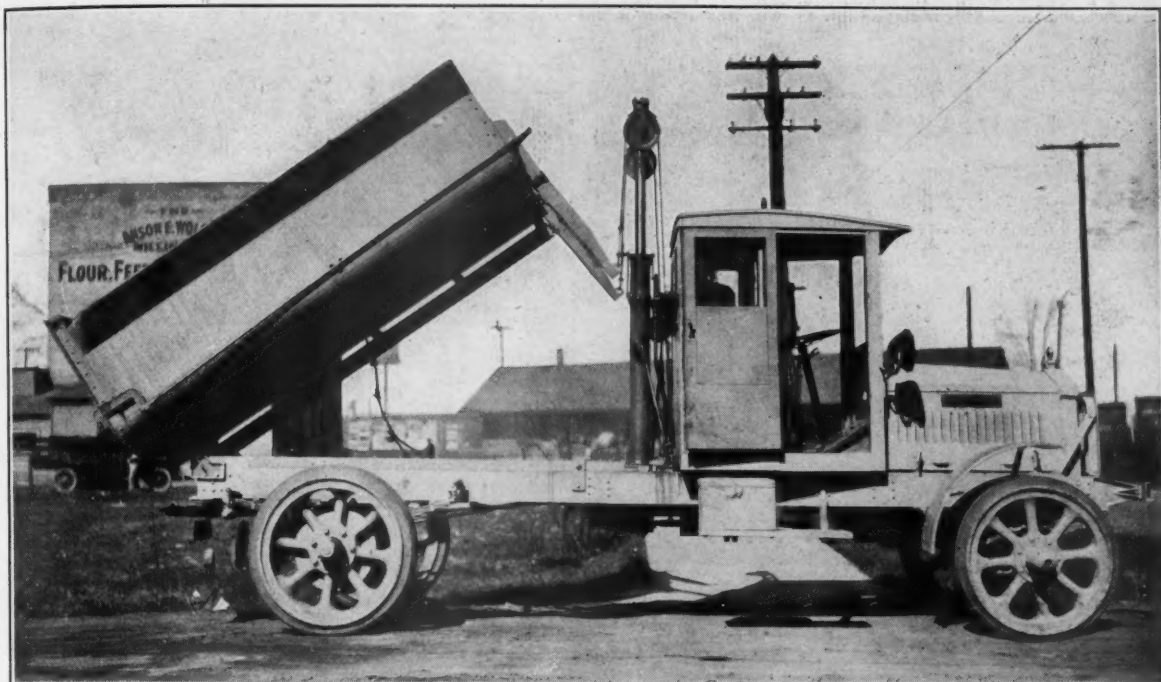
**JANNEY, STEINMETZ & CO.**

Main Office: PHILADELPHIA

NEW YORK OFFICE: HUDSON TERMINAL BUILDING



America's Highest Quality 1½, 2½, 3½, 5 Ton Trucks



**Reynolds Motor Truck Company**  
Mt. Clemens, Michigan



## Williams' Superior Drop-Forgings

**T**HE list of our clients is a veritable "blue book of industry," containing as it does the names of America's foremost manufacturers.

Without any desire to boast of our achievements, we confess to a feeling of pride as we look over these illustrious names—pride in the fact that Williams' Superior Drop-Forgings have been chosen by these masters of industry as measuring up to their high standard of quality.

**J. H. Williams & Co.**

*"The Drop-Forging People"*

**BROOKLYN**  
80 Richards St.

**BUFFALO**  
80 Vulcan St.

**CHICAGO**  
1080 W. 120th St.





## Is the Seat Covering of Your Trucks All That It Should Be?

Manufacturers of commercial vehicles would do well to give more serious thought to their seat coverings.

Trucks are out in all sorts of weather. They are exposed to blistering heat, driving rain, and intense cold.

The seat covering shares a large portion of this punishment and unless made of a durable material soon cracks under the strain.

**O'BANNON**  
COATED  
**FABRICS**

REG. U. S. PAT. OFF.

### Moleskin Quality

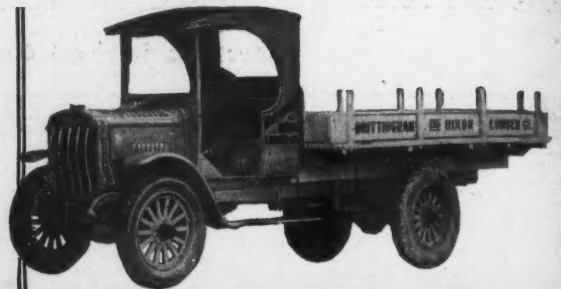
has a reputation for dependable year in and year out service. Gruelling weather conditions which would soon force the average covering to yield have no effect on Moleskin.

*Send for Samples*

**O'Bannon Corporation**  
200 Fifth Avenue New York City

*Manufacturers of*

Artificial Leather Rubber Top Fabrics  
Enameled Muslin, Drills and Ducks



# STOUGHTON

## Extra Wear in Every Part

Lower upkeep—longer life—greater service in this new Stoughton Oversize Truck. Built by an organization mature in manufacturing experience it sets a new standard in truck construction. The name Stoughton has been famous for 65 years—the new Stoughton Truck is giving the name even greater significance.

Stoughton Oversize Trucks are well balanced, dependable, low in operating costs. Three models—1½, 2 and 3 ton—designed for extraordinary service at a reasonable price.

If your territory is open it will pay you to put this truck on your sales floor. Write or wire for specifications and details.

**The Stoughton Wagon Co.**  
Stoughton, Wisconsin



# TRUCKS

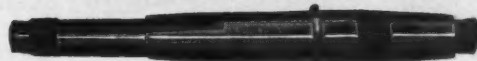
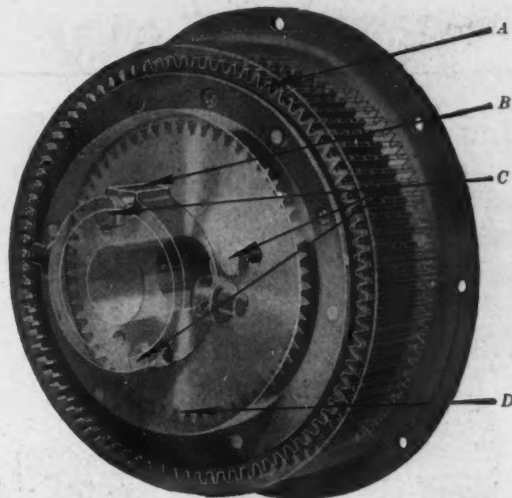
*The Velvet  
Clutch*

*With the Bull-  
Dog Grip*



## Multiple Disc Clutches

Detlaff clutches are more than merely disc clutches—specially designed springs, specially treated facings, unusually effective provision for lubrication and adherence to the most exacting standards of materials and of workmanship, give them an exceptionally long life and a high degree of dependability.



- A, D—Gear-tooth drive on all discs.
- B—Lubrication from any convenient point.
- C—Long, easy springs compensate automatically for facing wear.

*Detlaff clutches are made in a full range of sizes giving a unit for any torque demanded. We will gladly send full data to manufacturers.*

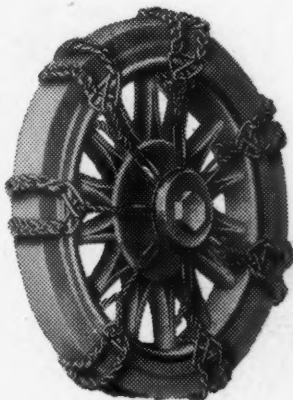
**A. J. Detlaff Company, 124 Lafayette Ave., East, Detroit, Mich.**

96 Ninth St., San Francisco

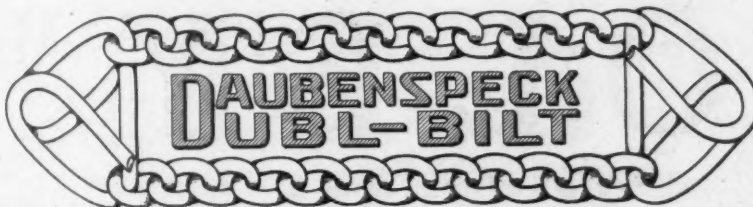
202 Chamber of Commerce, Indianapolis

2 Columbus Circle, New York

(48)



*Write for Dealer Proposition  
NOW!*



## SINGLE UNIT NON-SKID TRUCK CHAINS

These easy-on-and-off chains are also easy sellers. Dealers tell us they never knew any other chain to meet with such widespread approval.

Driver can adjust as many units as may be required, *without jacking up load*. This is a distinct advantage and a big selling feature. Chains are free to float on tires; cannot roll, lock on or cut tires; perfect traction even under most unfavorable conditions.

## MINUTE GRABS—FOR EMERGENCY

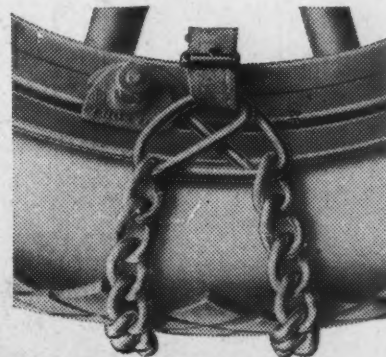
Every motorist should carry a pair of Minute Grabs in his tool box for emergency use. Can be put on quickly from running-board without getting down into the mud; sure to hold and to lift the car out of the deepest mud hole. Everybody enthusiastic about them; sales increasing rapidly. Display a set in your window. Every motorist is a possible customer, no matter what other chains he uses.

3½ and 4 inch sizes, per pair, \$3.00    4½ and 5 inch sizes, per pair, \$3.25  
(One for each rear wheel)

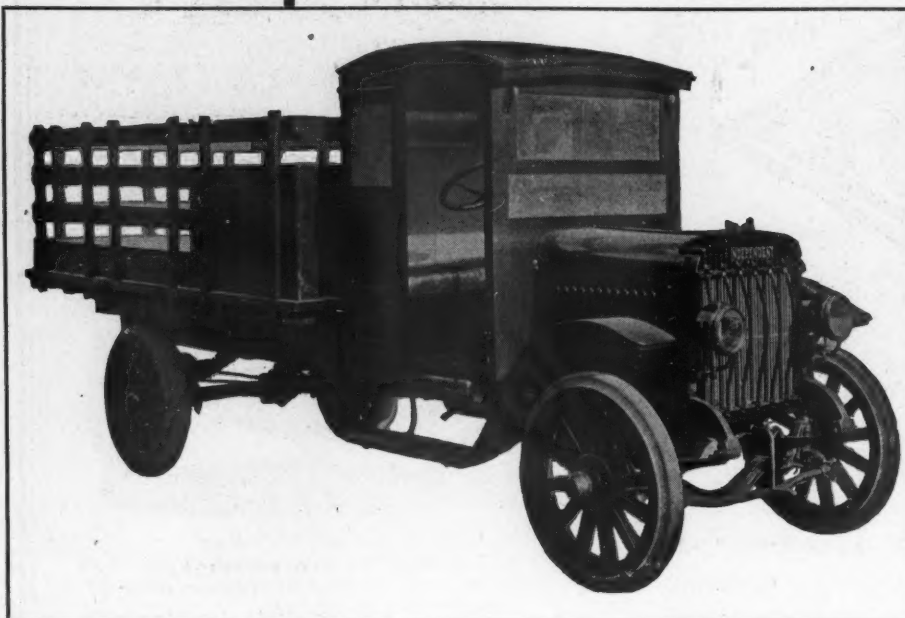
Get our interesting dealer proposition

**DAUBENSPECK CHAIN CO.**

**BUTLER, PA.**







## Measures UP TO Every Claim

Independent dealers never overstate the facts, because Independent Trucks represent the superlative in performance. They are equal to any task, giving dependable service over a period of years considerably longer than the average. Send for our literature—note the parts and general excellence of construction. Let us tell you how this big organization will place its unlimited resources behind the right type of dealer.

## INDEPENDENT 1-1½-2 TON TRUCKS

## FOLEY Traction Rims

### Many a Truck Sale

is made on account of FOLEY TRACTION RIMS.

The customer hesitates about buying a truck. He is not sure the driving wheels can develop enough traction for heavy loads on soft, miry roads.

### Saved by FOLEYS

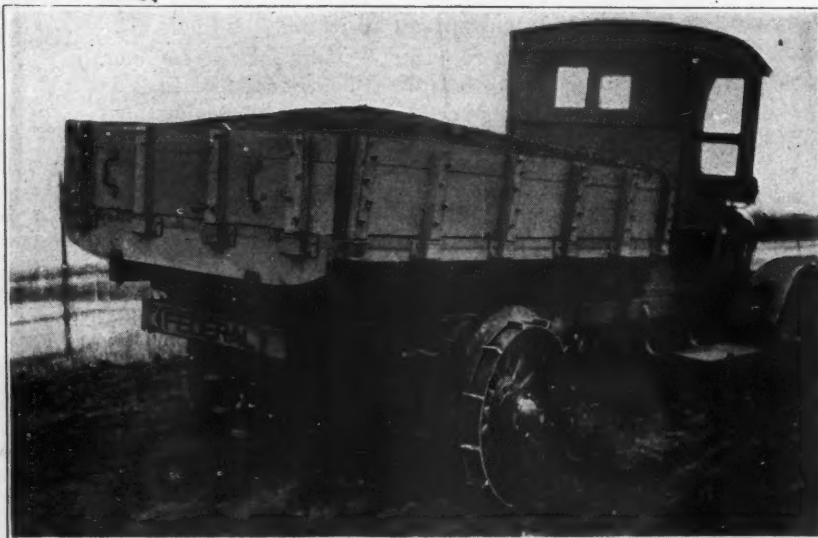
It is then the dealer saves the sale by suggesting FOLEYS.

He explains how on hard surfaces they do not come in contact with the road. But when soft going is encountered their broad rims at once take hold and furnish the necessary traction for steady, uninterrupted progress.

You'll also save many a truck sale—by selling traction-giving FOLEYS with the truck. Write for full particulars—NOW.

### Foley Traction Rim Co.

827 Hennepin Avenue  
Minneapolis, Minn.





BAY CITY TYPE L LOG-LOADING WINCH

## Speedy Log Loading With Type L Winch

This staunch BAY CITY product is easily loading logs despite friction of cable over logs a ready on truck.

Note that position of Winch allows entire space to be used for loading. Located on side of frame, it cannot get in way; cannot be damaged. Pulling capacity on a single line, 5000 pounds. Weight, 700 pounds.

### Cuts Down Time and Labor Costs

The dealer who sells motor trucks to lumber concerns will appreciate how much valuable time and high-priced labor this power-operated Winch can save his customers.

One of the many types of BAY CITY Winches which drastically reduce operating costs for truck owners who handle heavy machinery, safes, structural iron and steel, mechanical dump mechanism, etc.

*A splendid line for truck dealers  
Write for complete details*

**BAY CITY FOUNDRY & MACHINE COMPANY**  
1602 Water Street Bay City, Mich.

# BAY CITY WINCHES

## WARNER HEAVY DUTY TRUCK TRAILERS TWO AND FOUR WHEEL TYPES

**F**OR every trucking need there is a Warner Trailer to make every truck more profitable. Warner Trailers shoulder the lion's share of the load. Built on the best truck construction principles to stand up under the hardest service with the best trucks.

Owners of light trucks will be interested in the Warner Model S-5, an extremely practical proposition that will handle a load of better than 4,000 lbs. Equipped with pneumatic tires. This Warner Trailer and a  $\frac{3}{4}$  to 1 ton Truck creates practically a two-ton truck at a very low investment figure.

A handy and economical hauling unit for merchant, manufacturer or farmer. Write for literature and full information on how to halve hauling costs.

**The Warner Mfg. Co.**  
23 Main St., Beloit, Wis.







# Packard

## CABLE

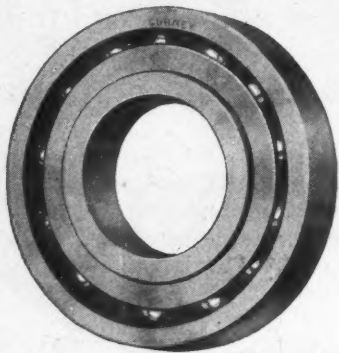
**Your Customers**

look to you with confidence to supply their needs with cable that will give full satisfaction. You can strengthen this good will by confining your purchases to a long established brand of Cable. Send for samples of Packard and Packard, Jr., today. It's guaranteed to give satisfaction.

*The Packard Electric Company*

Warren, Ohio, U. S. A.

CABLE DISTRICT OFFICES—New York, 141 West 36th St.; Detroit, 752 David Whitney Bldg.; Chicago, Dearborn and Van Buren Sts., 1207 Fisher Bldg.; Buffalo, 347 Ellcott Sq.



## THE AREA CONTACT IN GURNEY BEARINGS

A ball in a Gurney Ball Bearing does **not** have "Point contact."

Because the contour of the Gurney races very closely approaches that of the balls, and because all balls are slightly compressed under load, a larger portion of their circumference coincides with the contour of the raceways. Thus the spots of contact are of quite an appreciable area, and increase at a rapid rate with increased load.

In fact, in some Gurney Bearings, each ball is capable of carrying as much load with safety as 26 balls of this same size rolling between two plane surfaces.

The Gurney Idea of "area of contact," together with the Gurney method of assembling, which permits maximum size and number of balls, accounts for the greater load capacity of Gurney Ball Bearings.

## GURNEY BALL BEARING COMPANY

*Conrad Patent Licensee*

JAMESTOWN

NEW YORK



## The Axle Weight is Centered

Your customers will be very much interested to know it.

Point out that the greatest amount of weight of the Noble Axle is scientifically placed in the center of the axle.

This makes for an extremely slow wearing away of the rear tires of



The Noble method is a vast improvement over the contrary practice of massing the greatest weight on the axle ends—which quickly drives expensive truck tires to the scrap heap.

This is but one of many real service features which bring repeat orders for Nobles from enthusiastic customers.

Look into the Noble Franchise and Sales Plan. They hold mighty fine profit possibilities for the right kind of dealer. Let's get together!

**NOBLE MOTOR TRUCK CORPORATION**  
Kendallville, Indiana



K-9 Adjustable Wrench

# MOSSBERG

ALL STEEL WRENCHES AND TOOLS

## A Business-Building Line

**T**HE dealer who sells Mossberg Tools not only makes a good profit—he gets a quick turnover on his stock and builds up his trade through satisfied customers.

The completeness of the Mossberg line makes the possibility of a sale greater. There is a wrench or tool for every purpose.

The garage man, the motorist, the expert mechanic, each with his individual requirements, may find the right wrench among your Mossberg stock.

The Mossberg reputation for strength and service helps you to make your sales—it builds your business.

*Write for complete 1920 catalog*

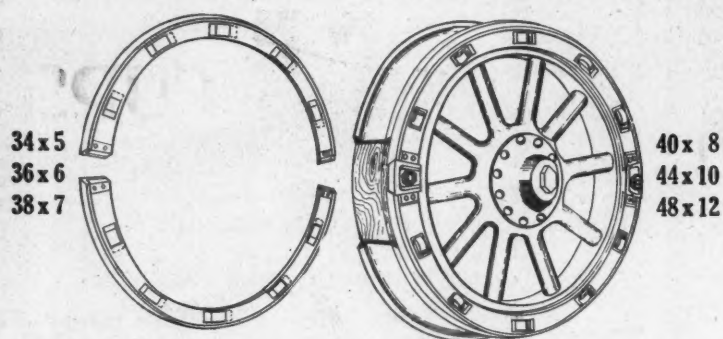


No. 45 Socket Wrench Set

WALTER L. TUTTLE, *President and General Manager.*  
FRANK T. CHASE, *Treasurer and Sales Manager.*  
EVERETT L. FORD, *Secretary and Superintendent.*

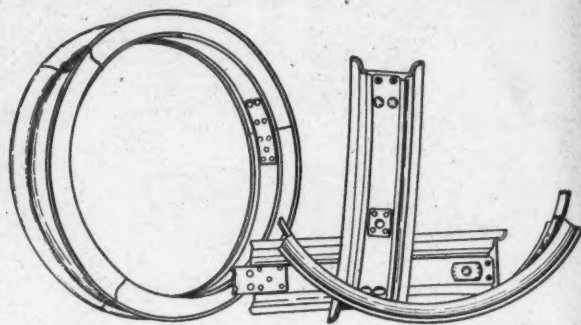
**FRANK MOSSBERG COMPANY**  
WRENCHSMITHS FOR 20 YEARS  
LAWRENCE, MASSACHUSETTS





### Copithorn Truck Type Demountable Rims Are Mechanically Perfect Because:

1. Copithorn Truck Type Rims are removed from the tire, not the tire from the rim.
2. Any make of pneumatic tire may be used with a Copithorn Rim.
3. Copithorn Rims fit all standard truck type felloe bands.
4. Pinching of tubes and valve stem tears are impossible.
5. Copithorn Rims have no side rings or locking rings which require hammering.
6. Pounding or prying the tire is absolutely inexcusable.
7. Running on a flat tire is unnecessary.
8. No tools other than a common screwdriver are necessary to mount or dismount a Copithorn Rim.
9. Time schedules are not interfered with by tire or tube changes.
10. Copithorn Rims will not warp.
11. Anyone can change tubes on a Copithorn Truck Type Rim in five minutes, regardless of how badly the tire is rusted to the Rim.



To mount a Copithorn truck type rim upon a wheel, the rim is placed over the felloe band in the usual manner. Then the two slotted steel bands are placed on the wheel, the tapered slots sliding under the heads of the gooseneck bolts by means of the action of the locking wedge and are thus held firmly in place. This operation is all that is necessary to secure the complete fastening of the rim to the wheel with ten bolts.

The removal of the rim from the wheel is accomplished by first loosening the locking wedge, then tightening the wedge on the opposite side of the wheel, thus sliding the rings in the opposite direction and causing the gooseneck bolts to throw the slotted steel bands from the wheel.

The entire time to either mount or dismount a rim from the wheel requires less than one minute.

The construction of Copithorn rims permits a compactness in shipping requiring one-third of the space used by solid rims.

The advantages of the Copithorn truck type demountable rim, amongst which are the saving of time, labor and money, are the results of constant tests conducted since 1905. All these features are covered by a series of patents both in the United States and foreign countries.

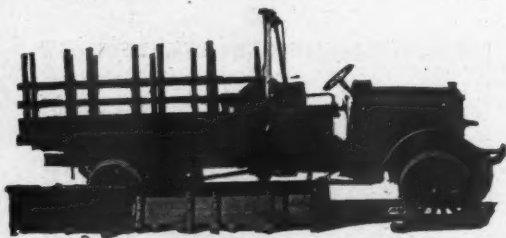
**The C. K. Seymour Corporation**

**Eastern Office:**

**Little Building, Boston**

## SIMPLEX Four Bodies in One

You cannot afford to handicap your truck with a body capable of only one line of service. It must be equipped to meet every need which arises and the Simplex "Four in One" is the choice of those who demand such efficient usefulness.

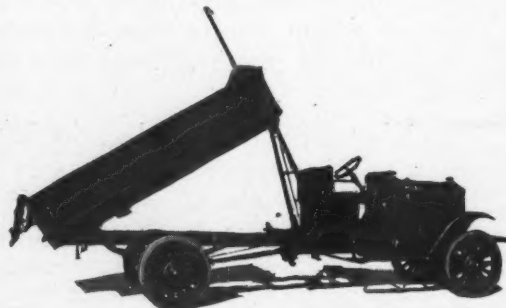


the body in 40 seconds. When not in use, it is unobtrusive in every way; but when you need it, it is "on the job."

Price, weight, strength are points upon which we invite comparison with the obsolete equipment you have been used to. May we not give you further information?

Here is the outfit. The possibilities are evident as is the simplicity of it. You can have the type of body to exactly suit the load in a few moments.

The hoist weighs only 237 lbs., yet will elevate



**Simplex Manufacturing Co.**  
CONNEAUTVILLE, PA.

**U. S. Sales Agent**  
H. R. DAILEY  
3028 Carroll Avenue  
CHICAGO, ILL.

# PATRIOT

## Motor ★ ★ ★ ★ Trucks

**B. T. Hammett, Yselta Texas, wrote:**

*"This is to certify that I loaded a two and a half ton Patriot Truck with 5000 lbs. of potatoes on the river and hauled them over dirt and sand road to the paved road, a distance of three miles, in high gear without any trouble. A feat that has not been equalled, so far as I know, with any truck in the valley."*

**Patriot Motors Company**  
Manufacturers  
1331 P Street Lincoln, Nebraska

Revere Model 1500 to 2500 lbs. Capacity	Lincoln Model 3000 to 5000 lbs. Capacity	Washington Model 5000 to 7500 lbs. Capacity
---	--	---

## BLOOMING CUPS

Scientific Oil Lubrication  Automatic Oil Lubrication

### OVERLAND FOUR CARS

1000 MILES  
ON  
ONE FILLING

**Replace Regular Oil Cups  
Easily Installed**

SET OF NINE POSTPAID **\$6<sup>75</sup>** 

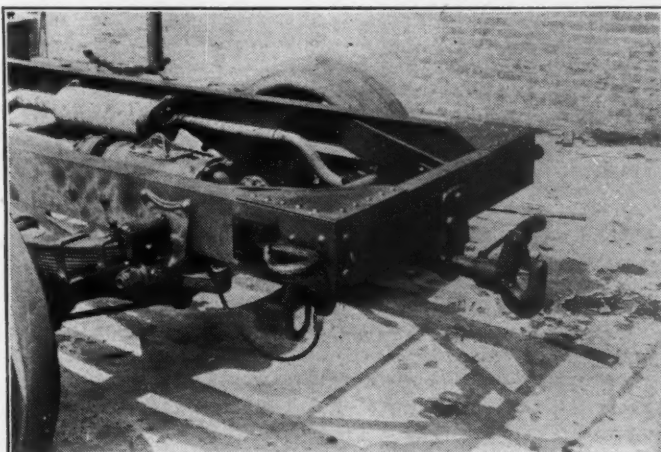
**CHARLES S. MONSON**  
Sales Department  
2113 Dime Bank Bldg., Detroit, Mich.

**SPECIAL PROPOSITION FOR DEALERS**  
MFG. BY BLOOM FLUSHER CO., TIFFIN, OHIO

**BENDIX**  
**ECLIPSE**  
for ELECTRIC STARTERS DRIVE AUTOMATIC ENGAGING & DISENGAGING



**194 Motor Grand Truck Builders Use It**  
**ECLIPSE MACHINE CO., ELMIRA, N. Y.**



**MANSFIELD TRAILER OR TOWING ATTACHMENTS,** Types "E" and "G," can be applied to any truck in one hour or less. It is only necessary to drill seven 11-16" holes, and all the tools required are a breast drill and wrench.

**MANSFIELD STANDARD RADIATOR GUARDS,** Types "A," "B" and "C," have been "LISTED AS STANDARD" by the Underwriters' Laboratories. We are handling with the National Automobile Underwriters' Conference in an effort to secure reduction in collision insurance for all trucks equipped with our guard.

**MANSFIELD COMBINATION FRONT BUMPER AND TOW HOOKS,** Type "I," for trucks with curved or gooseneck frames.

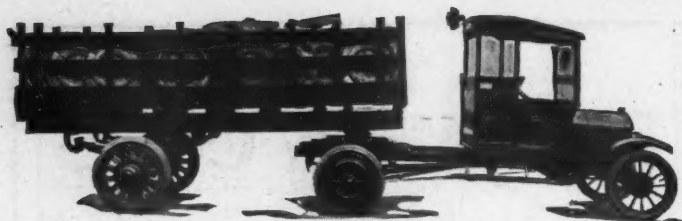
**MANSFIELD HAND FORGED TOW HOOKS,** Type "D," can be used on front and rear of trucks.

We also manufacture Steel Dump Bodies, Steel Stake Bodies, Hand Hoists and complete DUMPING UNITS for all small trucks.

Write for Catalog

**MANSFIELD STEEL CORPORATION**  
Detroit, Michigan





## King Trailers Help Sell Motor Trucks

By doubling the capacity of a motor truck, the King Trailer enables dealers to offer customers a haulage unit at greatly reduced cost.

A 5-ton King Trailer and a 2-ton truck cost only slightly more than half as much as a 5-ton truck—do the work of a 5-ton truck with an operation expense only 10 per cent greater than that of a 2-ton truck.

With an increased production, we are in position to enlarge our distributing organization. Write for our dealer proposition.

King Trailer Company

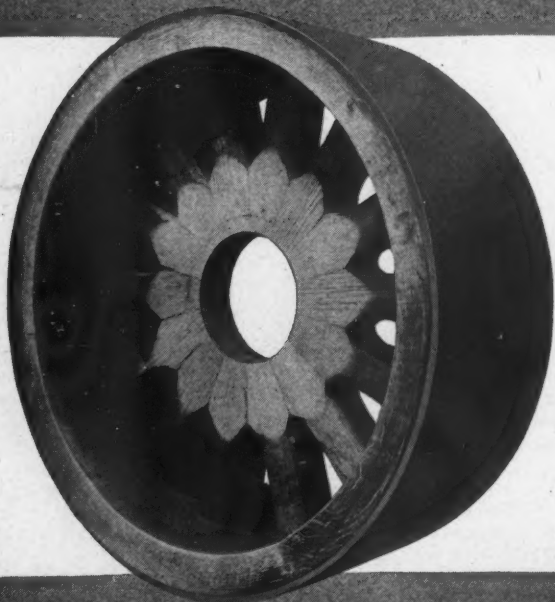
601 Main Street

Ann Arbor, Mich.

# King Trailers

Decrease Your Hauling Expense~

## MUNCIE WOOD WHEELS



**STAND ALONE**  
**MUNCIE WHEEL COMPANY**  
MUNCIE, IND.



## For Service and Appearance Always Select A. B. & B. Sheet Metal Parts

We specialize on HOODS, FENDERS and TANKS that are guaranteed in every way, giving the trucks on which they are used freedom of repairs and loss of working hours.

Not only do A. B. & B. SHEET METAL PARTS stand the rigors of truck operation successfully but they retain their original style and appearance.

*Send us your blueprints for estimates  
Samples of stock furnished with estimates*

**A. B. & B. Sheet Metal Works**

CHAS. STOLPER, President

Fond Du Lac Ave. and 33rd St., MILWAUKEE, WIS.

## Quick Sales Satisfied Customers



## Archer Steel Dump Body and Hand Hoist

For contractors. For grain men and coal men. For bulk deliveries of all kinds. This equipment speeds deliveries—only 2½ minutes to dump a 5-ton load. No upkeep expense—everlasting body. Write for prices and details.

**ARCHER IRON WORKS**

2442 W. 34th Place

Chicago

Makers of the Archer End-Discharging Concrete Mixer

GET OUR NEW CATALOG "V"  
SHOWING

**BANTAM**



USED ON THE BEST  
MOTOR TRUCKS

THE BANTAM BALL BEARING CO.  
BANTAM, CONN.

**United States  
Motor Trucks**

FLOATING POWER PLANT

"As Good as the Name"

Seven models—five worm drive  
—two with Clark Axles—1½ to  
6 tons capacity.

The United States Motor  
Truck Company

Incorporated

Cincinnati

Ohio

**ADAMS AXLES**

Represent Advanced  
Thought in Axle  
Construction

Adams Axle Company  
Findlay, Ohio

Detroit Office: 1401 Kresge Building  
W. D. Rockwell, Mgr.

**A**

Replacement Springs  
offering

**Bigger  
Profits**  
for Dealers

for  
all  
makes  
of Cars



Only the  
finest car-  
bon or alloy steel  
used. These are  
scientifically heat-treated and  
tempered in oil. Results in utmost resiliency  
combined with endurance. Made with or  
without center bolts.

**15,000 Springs  
Always in Stock**

Instant delivery, no matter what make of car. Every  
spring bears our long-time guarantee of satisfaction or  
money back quick. For faster service and bigger  
profits sell Maremont Springs.

Write today for our Catalogue and extraordinary offer

**Maremont Mfg. Co.**

916-918 S. Wabash Ave., Chicago  
534-538 West 58th St. New York



## FRUEHAUF TRAILERS



### *Speed Up Your Deliveries Increase Haulage Capacity*

A 2 ton truck and 6 ton Fruehauf Semi-Trailer will go over the road at 15 miles per hour.

A 6 ton truck, with full load, will do well to make 10 miles per hour. This same truck will pull a 10 ton trailer and make almost as fast time.

*Trailers Double and Treble the Haulage Capacity With an Actual Reduction in Haulage Costs.*

The investment for truck and trailer is less; the operating expense is less; and the time saved by trucks and men means economies that add to profits.

*Fruehauf Semi-Trailers and Four Wheel Trailers are the Standard of America for efficient Haulage Equipment.*



**Fruehauf Trailer Co.**  
1302 Gratiot Ave. Detroit, Mich.

# Wilson

*"That's Haul"*

**J. C. WILSON COMPANY**  
Detroit Michigan

## THE EXCELSIOR

225 Ton Tire Applying  
Press No. 34

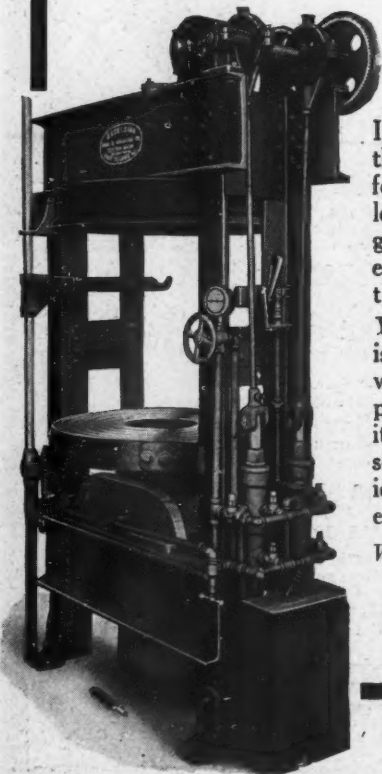
**Quickly Pays  
for Itself**

It's amazing how quickly the EXCELSIOR pays for itself. Enthusiastic letters from repairmen, garagemen, truck dealers eloquently testify to this fact.

You also will be astonished at the speed with which your Excelsior pays its way. After that it's all "velvet." And solid tire-applying service, as you know, is extremely profitable.

*Write for full particulars*

**Excelsior Tool  
& Machine Co.**  
E. St. Louis, Ill.



## HOODS

**Fenders Tanks  
Mud Guards**

We specialize on lighter gauge sheet metal parts for your commercial truck.

Parts manufactured according to your specifications and to fit your product.

Superior in

**Accuracy  
Workmanship  
Finish**

**THE FOSTORIA PRESSED  
STEEL COMPANY**  
FOSTORIA, OHIO



**S-M-C**

**Asbestos  
Brake Lining**

## It's a Know Sign—Every Way

—that triangle trade-mark of S-M-C.

By it the car owner *knows* the wear is there. It came with the finest asbestos yarn, was increased by expert weaving and brought to perfection by impregnation with the exclusive S-M-C compound.

He *knows* it resists great heat—that's vital in brake lining. To the great heat resistant qualities of the finest asbestos is added our impregnating agent—itsself a barrier to heat generation.

He *knows* the co-efficient of friction is right—that he can depend on slipless, positive contact—that his safety is certain.

Our triangle mark is the symbol of our fifteen years testing and experimenting—the guide to superior service and Safety Made Certain.

**STAYBESTOS MFG. CO.**

**5523 Lena Street Philadelphia, Pa.**

*The Modern Factory, devoted exclusively to the manufacture of brake and transmission lining*

**Now and Always  
Completely Equipped**

## OSHKOSH 4-Wheel-Drive Truck

Hauls heavy average  
“pay loads” because  
designed for pneumatics

**Oshkosh Motor Truck Mfg. Co.**  
Oshkosh Wisconsin

## STANDARD UNIVERSAL JOINTS

### Selected by U.S. Government

Three of the outstanding facts which made STANDARDS the emphatic choice for use on the Government's double “A” trucks:

1. Scientific accuracy of design—
2. Automatic lubrication between movable parts—
3. Small number of working surfaces.

Let us tell you in detail how this long-wearing Universal will greatly increase the efficiency of your assembly. *Send us your blueprints.*

**The Universal Machine Company**  
430 Ridge Street Bowling Green, Ohio



## CURTIS CLUTCH DISCS

**CURTIS** Steel Clutch Discs are furnished in high carbon or soft steel, plain or slotted, flat or formed, unfinished or ground and polished, tempered or untempered—any size.

**CURTIS  
CLUTCH DISC  
COMPANY**  
1835 Kienlen Ave.  
St. Louis Missouri





**1 1/2 Ton Worm-Drive Chassis, \$2150.00**  
**2 Ton Worm-Drive Chassis, \$2600.00**

**Buda Motor      Brown-Lipe Clutch**  
**Bosch Magneto      Timken Worm Drive**  
**Brown-Lipe Transmission**  
**Timken Bearings Throughout**

This high-grade Transmission and Power Plant is mounted on a chassis exceedingly well designed and very substantial.

You will find this a profitable line to handle.

The durability and efficiency of these trucks enable you to secure your customers' repeat orders and build up a clientele of satisfied users.

**Sullivan Motor Truck Corporation**  
**Rochester, N. Y.**



## Power-Driven Tire Pumps Simplicity

Of Wizard design, eliminates all troublesome features of the valve type pumps with their multiplicity of parts and their necessary adjustments and repairs.

There are only three moving parts in the Wizard Pump and for its service-life no adjustments, renewals or repairs are necessary. A turn of the grease cup before starting is the only attention needed.

As equipment on your chassis it will end your tire inflation troubles, and day in and day out it will deliver maximum pressure even under the severest and most adverse conditions.

Immediate deliveries of all models. Literature sent upon request.

**Sundstrom Manufacturing Co.**

Successors to Rex Machine Co.

**Shields Avenue at 32nd St.      Chicago, Ill.**  
**Detroit Office, Garfield Building**

SERVICE

**Duplex Simplex**

Double drive Single drive

GOVERNORS

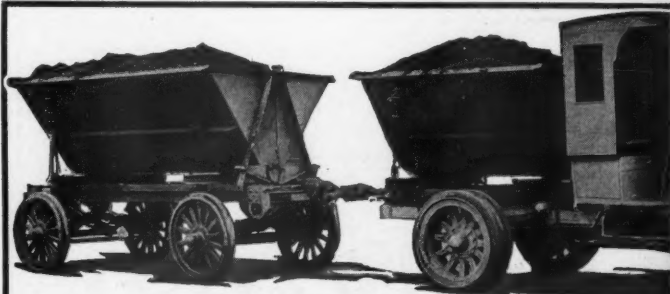
STATION

**Your Trucks Should be DUPLEX Equipped**

1. They will last longer.
2. Keep out of the repair shop.
3. Keep on the job.
4. Make better average time.
5. Deliver more goods at less expense.
6. Use less gas and oil.
7. Competitive tests prove this.

Equip your trucks with **DUPLEX**  
Specify **DUPLEX** when ordering new trucks

**THE DUPLEX ENGINE GOVERNOR CO., Inc.**  
56 Flatbush Ave. Ext., Brooklyn, N. Y.  
Branches in Chicago and Detroit  
Service stations in all principal cities



Low Operating Cost

## GRAVITY DUMP BODIES

Manufactured Under the Winsor Patents

Let Us Estimate on Your Requirements

**TRANSPORTATION EQUIPMENT CO., Inc.**

Manufacturers—Transportation Engineers

**1685 Gratiot Avenue      Detroit, Michigan**



## Trucks Equipped With **Strom Bearings** Give the Best Service

The quality and accuracy of Strom Bearings reduce friction with a consequent saving of power.

They enable your truck to carry larger loads at less cost, thus giving greater service and satisfaction.

**U. S. Ball Bearing Mfg. Co.**

(Conrad Patent Licensee)

4535 Palmer St.

Chicago, Ill.

# Strom

BEARINGS

The

## CALCULAGRAPH

*"The Elapsed Time Recorder"*

### Takes the Guess Work Out of Repair Charges

It makes a highly favorable impression on your customers when they realize there is absolutely no guess work about your repair charges.

*Let us tell you how the  
Calculagraph can cut  
YOUR Shop costs. Write*

It pleases the good workman, and acts as an incentive to better work—to know that the Calculagraph tells you how well and speedily he does his work.

It gives you a comfortable, satisfied feeling that comes from knowing that the Calculagraph shows you your exact cost daily.

**The Calculagraph Co.**

Dept. 12

30 Church St. New York



## SPECIFY **Fahrig Metal**



### The Best Bearing Metal on the Market

A special process tin base, copper-hardened alloy for crankpin and crankshaft bearings. Uniform and homogeneous. Used like a regular babbitt metal, but has superior anti-friction qualities and great durability.

The only one we make. The only ones that make it.

**FAHRIG METAL COMPANY**

34 COMMERCE STREET, NEW YORK



Gramm-Bernstein Trucks have an enviable name for economy.

Their cost of operation is exceptionally low. Their cost of upkeep is likewise low. Their life is so long that these costs, spread over a period of years, are reduced still further.

All Gramm-Bernstein worm-drive models carry, as standard equipment, accessories which are essential to the satisfactory operation of any truck, and which are worth \$550 to \$600 at today's prices.

**The Gramm-Bernstein Motor Truck Co.**

Lima, Ohio, U. S. A.

Builder of the First Liberty (U. S. A.) Truck





The JOLY has done more hard work than any other plug in the world. Under the terrific heat generated by Allied warplanes it lasted longer than any other. Over five million Jolys were used as the standard throughout the war. The

# "JOLY"

(Pronounced "JO-LEE")

## SPARK PLUG

has a heavy central electrode and two heavy milled integral fingers that furnish extra radiation. It is proof against pre-ignition, compression leaks, carbon and short circuits. It proved this during the war. Get behind the most remarkable spark plug made.

**LYONS IGNITION COMPANY**

215-219 Fourth Avenue, New York

### AN OPPORTUNITY FOR A HIGH-GRADE SALESMAN

Have you had selling experience in the Motor Truck industry, preferably in the selling of Motor Truck equipment for a large concern?

Have you the ability to call on and sell Motor Truck Manufacturers and Dealers?

If in addition to these important qualifications, you have enthusiasm and initiative, there is an extremely advantageous opening for you with a high-grade manufacturing organization. Write.

Address:

"OPPORTUNITY"

COMMERCIAL CAR JOURNAL  
Market and 49th Sts., Philadelphia, Pa.

## MANUFACTURERS AND DEALERS

COMMERCIAL BODY  
SERVICE

*Clark of Oshkosh*  
SERVICE QUALITY

BODIES AND CABS

ONE TON LINE—CATALOG 20  
HEAVY LINE—CATALOG 21

WRITE FOR THEM

**J. L. CLARK MFG. COMPANY**  
OSHKOSH, WIS.



GRAHAM BROTHERS  
1½-TON SPEED TRUCK  
is sold by the leading  
automobile dealer in  
each of fifty important  
American cities.



## Perfect Bearing Surfaces

With TIMESAVER Bearing Abrasive Compound, unskilled men now produce perfect bearing surfaces in a quarter the time with a quarter the labor.

TIMESAVER Compound fits any size or type of babbitt, brass or bronze bearing. It is harmless in use for it turns to a lubricant after the cutting is done.

Send \$1.50 for a trial can and make your own tests. Six can cartons, \$9.00.

### IMPORTANT

Imitations of TIMESAVER are being exploited. We suggest for your protection that you insist on getting TIME-SAVER when ordered. Full legal rights will be sustained.

**M. T. K. SALES CORPORATION**

296 Andrews Street, Rochester, N. Y.

Manufacturers M. T. K. Products Co., Seattle, Washington



A finer type of motor haulage at a lower cost per mile

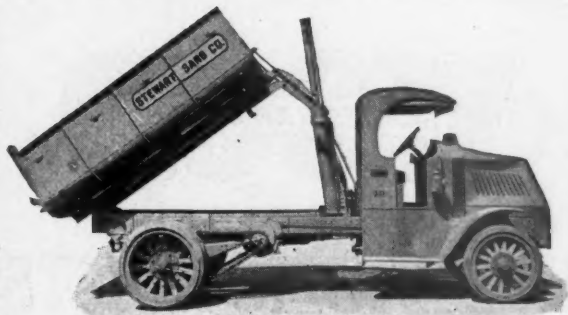
## TIFFIN MOTOR TRUCKS

1½ to 6 ton capacities in all types of bodies

We are now making contracts for 1921 production

**THE TIFFIN WAGON CO.**

Tiffin, Ohio



## Big Sand Dealers

strongly recommend when they buy

### Standard Steel Dump Bodies

because they are made on correct engineering principles by men with years of Body-building experience.

Write for circular No. 44 on Steel Dump Bodies and Hoists—or better yet—send specifications for estimates.

### Standard Steel Works

Successors to the Ell-Kay Mfg. Co.

1722 Tracy Kansas City, Mo.

S. W. Distributors Woods Hydraulic Hoist  
Made by Hydraulic Hoist Mfg. Co., St. Paul, Minn.



A Chain Hoist that gives Perfect Service

Catalog sent upon request

**FORD CHAIN BLOCK CO.**  
2ND & DIAMOND STREETS PHILADELPHIA, PA.

OVER-SEAS REPRESENTATIVE

ALMACOA ALLIED MACHINERY COMPANY OF AMERICA 81 CHAMBERS ST. NEW YORK, U.S.A. ALMACOA

PARIS BRUSSELS TURIN BARCELONA RIO DE JANEIRO





## Finished Brass Castings

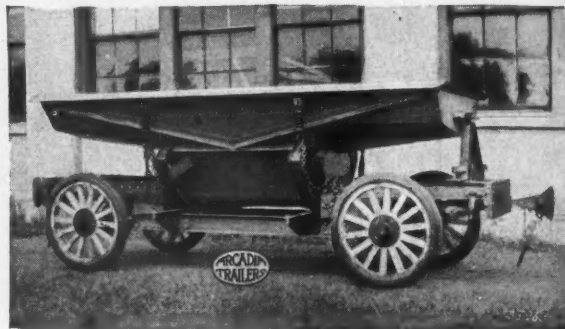
Do you know that you can have brass parts cast in finished form—perfect in contour, smooth surfaced, of uniform solidity and to limit measurements?

The "Do-Di" process of making finished castings cuts brass part production costs to bed-rock level.

Let us send you the "Do-Di" Booklet

THE WORLD'S LARGEST MANUFACTURERS OF DIE CASTINGS  
**DOEHLER DIE-CASTING CO.**  
 MAIN OFFICE AND EASTERN PLANT: BROOKLYN, N.Y.    CENTRAL PLANT: TOLEDO, OHIO.    WESTERN PLANT: CHICAGO, ILL.  
 SALES OFFICES IN ALL PRINCIPAL CITIES

(DDC-61)



## Clean Your City With Arcadia Trailers

Write for Special Circulars

We Build

### A Trailer for Every Trade

From One to Six Tons Capacity

Trailerize Your Trucks With Arcadia Trailers

Write for Trailer Information

**Arcadia Trailer Corporation**  
 19 Murray Street    Newark, New York State

## BRIDGEPORT WORM DRIVE TRUCKS

*Trustworthy, Dependable  
Practical and Efficient*

Offering Three Models

1½ Ton Chassis	-\$2350
2½ Ton Chassis	-2850
4 Ton Chassis	-3650

All Prices F.O.B. Bridgeport

*The ALL-WORK Truck Sold  
at an ALL-POPULAR Price*

**Bridgeport Motor Truck Company**

Motor Truck Manufacturers

BRIDGEPORT

CONNECTICUT



## HYDRAULIC HOISTS and STEEL DUMPING BODIES

Manufactured by

**WOOD HYDRAULIC HOIST &  
BODY COMPANY**

Main Factory

1026 Bellevue Ave., Detroit, Michigan

Branches

NEW YORK  
721 E. 135th St.

CHICAGO  
2911 Indiana Ave.

SAN FRANCISCO  
441 Folsom St.



## JORGENSEN VAPOR PRIMER

THE JORGENSEN Vapor Primer is a sure aid to more economical truck operation. With this device a start is assured at the first or second quarter turn of the motor, at any temperature or with any grade of fuel.

Its use eliminates the need of a choker, with its waste of gasoline and constant trouble of "flooding." On the truck equipped with a starting system it eliminates engine spinning, with its heavy drain upon the battery and needless wear upon the starter.

We should like to mail you a copy of a booklet explaining how the Jorgensen Vapor Primer is a year-round aid to more economical truck operation.

We manufacture a complete line of high-grade machined brass motor fittings—Sediment Traps, Pet-Cocks, Priming Cups, etc., also Motor Tappets.

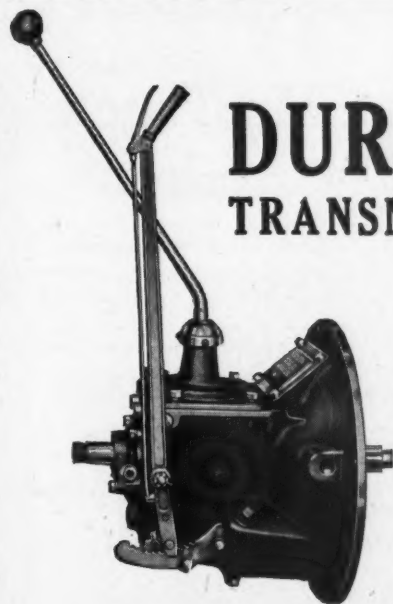
**THE JORGENSEN MFG. CO.**  
WAUPACA WISCONSIN

## The Mark of a New Era in Motor Truck Efficiency



*Watch for  
Announcements*

**The THOMART MOTOR CO., Inc.**  
Everett Bldg., Akron, Ohio  
Factory: Kent, Ohio



## DURSTON TRANSMISSIONS

With our capacity doubled during the past few months, we are now in large production on transmissions suitable for trucks up to one-ton capacity or speed wagons.

Our present designs and production methods are the result of years of development. We are in a position to deliver transmissions that are RIGHT in every particular. Your inquiries are solicited.

**DURSTON GEAR CORPORATION**  
SYRACUSE, N. Y.

## WE FINANCE AUTOMOBILE AND TRUCK

**Time Sales**

**No Red Tape Necessary**

*Write for Particulars*

**Transportation  
Finance Company, Inc.**

Executive Offices  
**WILDER BUILDING**  
**ROCHESTER, NEW YORK**



# Titeflex

REG. U. S. PAT. OFF.

## ALL-METAL FLEXIBLE TUBING

FLEXIBLE without sliding joints  
TIGHT without packing

TITEFLEX withstands the constant weaving of the frame which is present in all motor driven vehicles, as well as the vibrations due to engine and to road shocks. It absorbs vibration.



*Enlarged section of Titeflex All-Metal Tubing showing detail construction. The diaphragm action of the convolutions produces flexibility.*

We also manufacture all of the Interlocked types, both packed and unpacked.

Write for Literature

**TITEFLEX METAL HOSE CORPORATION**

Badger Ave. and Runyon Street

Newark, N. J.

# Moline Truck

Watch for Announcement

**Moline Plow Co.**

Moline, Ill.

# "NIGRUM"

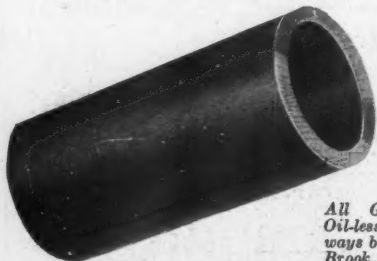
IMPREGNATED HARDWOOD  
OIL-LESS BUSHINGS

TRADE MARK REG. U. S. PAT. OFF.

## When Lubrication is Difficult

"Nigrum" (impregnated hardwood) Oil-less Bushings serve a definite purpose for which no other type of bushing is so advantageously suited.

At certain bearing points, difficult of access, "Nigrum" Bushings alone will function smoothly and steadily in the face of continued neglect.



We also manufacture "Bound Brook" graphite and bronze Oil-less Bushings.

*All Genuine Graphited Oil-less Bushings have always been made at Bound Brook, U. S. A.*

**Bound Brook Oil-less Bearing Co.**

*Specialists in the manufacture of Oil-less Bushings for more than a third of a century*

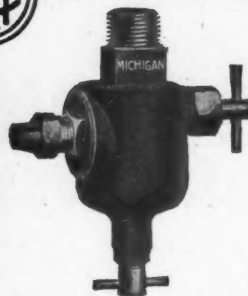
**BOUND BROOK**

**NEW JERSEY**

Detroit Office: 1723 Ford Bldg.



THE GUARANTEED KIND



**Mr. Truck Maker**

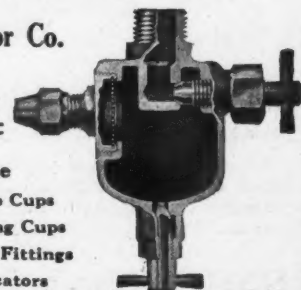
Keep the dirt and water from the carburetor by using

## Michigan Sediment Traps

1. Screw it into the gasoline tank.
2. The bowl traps the water.
3. The strainer gets the dirt.
4. Clean gasoline goes to the carburetor.
5. The needle valve shuts it off tight.

**Michigan Lubricator Co.**

Detroit, Mich.



### Part of Our Line

Air Cocks	Grease Cups
Drain Cocks	Priming Cups
Gasoline Cocks	S.A.E. Fittings
Oil Cups	Lubricators

MADE BY MICHIGAN LUBRICATOR CO. DETROIT.



SIDE VIEW

## Dumps a 3 Yard Load in 1½ Minutes

That's the kind of demonstration of the Automatic Side-Dump Body that convinces.

Show your prospects further that it dumps in any weather; can't get out of order; occupies all available space back of driver's seat; dumps all the load off without operating truck; fits any chassis.

Outwears any truck. Its many valuable time and labor-saving advantages emphatically influence customers to buy your trucks equipped with Side-Dump Bodies. Write for interesting dealer proposition.

### AUTOMATIC DUMP CAR COMPANY

Sales Department 7

1603 Ernsperger St.

South Bend, Ind.

## Automatic Side-Dump Body

# ECONOMY

the kind that makes you forget the bug-bear of mounting fuel and oil costs—that gives you long mileage on gas and on oil—that keeps your car free from carbon, free from annoying motor troubles—that's the kind of economy you get with

## PRESSURE PROOF PISTON RINGS

One 3-part or two 2-part rings per piston are all you need



MANUFACTURED BY  
**PRESSURE PROOF PISTON RING CO.**

107 MASSACHUSETTS AVE. BOSTON, MASS.  
CANADA - PRESSURE PROOF RINGS LTD. - SUN LIFE Bldg. - Montreal, Quebec

# FOUNDRY FOR SALE

## PONTIAC, MICHIGAN

Within twenty-five miles of Detroit on good concrete road—good rail facilities. Fully equipped for aluminum, brass and bronze casting work and could readily be converted to grey iron. Fifteen thousand square feet of floor space. One story concrete block construction built about two years ago. Four acres of land. Plant is centrally located and labor conditions are good. Will sell with or without equipment. For particulars and price, write:

Drawer 47, SYRACUSE, N. Y.

# GRANT SPEED TRUCK

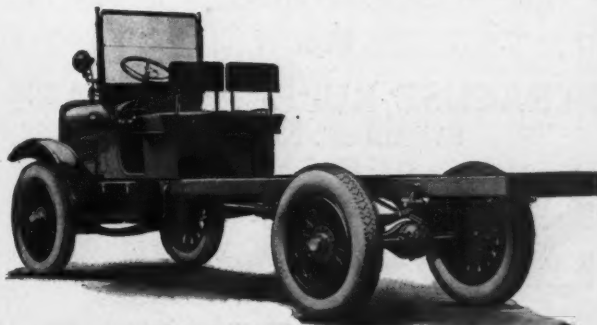
## Model 17

1½-2 Tons

Electric Starting and Lighting  
Complete Equipment

140 INCH WHEELBASE

FAST—ECONOMICAL—DEPENDABLE



**GRANT MOTOR CAR CORPORATION**  
CLEVELAND





## Steel Cabs for Greater Service

A complete line of open seats and dashes, semi-closed and fully closed cabs for motor trucks, in steel construction of the highest standard.

## Sheet Steel Products Co.

MICHIGAN CITY, IND.



# MOTOR TRUCKS

## The "Blue J" Tractor



## Dart Truck AND Tractor Corp.

WATERLOO, IOWA

## CONSULT TIRE SPECIALISTS

**W**ISE truck operators thoroughly believe in pneumatic tires. The wiser, who keep constantly in touch with changing products, are consulting *Tire Specialists*.

**T**HE very wisest are looking into Syra-Cord tires for truck equipment—because these tires are **built by cord tire specialists**, who build nothing else.

Are you one of the wisest?

*Dept. N*

**SYRACUSE RUBBER COMPANY**  
SYRACUSE, NEW YORK

# Syra-Cord TIRES



*Built By*  
**MUSKEGON  
MOTOR  
SPECIALTIES  
COMPANY**  
MUSKEGON,  
MICHIGAN.

*By Reputation — "The Best Cam Shafts Made"*

Jobbers!

Dealers!



## Sell the Truck Owner Uninterrupted Working Days

That's what selling him the WARMAN RADIATOR GUARD means—you actually sell him uninterrupted working days.

His truck may meet with a head-on collision—but with the powerful WARMAN efficiently protecting the radiator—the weakest member of the truck assembly—the truck will come out unscathed.

The shock of the impact may bend the forward braces, but the WARMAN patented construction will pull the Guard itself away instead of being forced back on the radiator.

DEALERS: You will be doing the truck owners of your locality a very great service by pointing out the WARMAN'S big money-saving advantages. Write your Jobber or direct to us for full particulars.

THE FUNDAMENTAL CORPORATION  
270 Union Avenue  
BROOKLYN, N. Y.

*The*  
**WARMAN**  
RADIATOR GUARD



Day in, day out  
**3 years**  
on the job

*And I haven't  
missed a customer.*

My pump came to me equipped  
with **TRIPLEXD**

The builders of ~  
this pump were  
taking no chances  
with the reputation  
of their product ~  
They made the best  
pump they knew how.  
They put TRIPLEXD  
hose on to keep it best  
And pump and hose  
have both made good  
I'll say they have!!

Every length of  
TRIPLEXD Gas-  
oline Pump Hose  
is guaranteed  
in writing for  
one year's ser-  
vice ~ ~ ~ ~ ~

METAL HOSE & TUBING CO.  
BOSTON, U. S. A.



## Power for Bad Hills With a Full Load and a Trailer!

THREE Schacht Trucks with ten-speed trans-  
mission—two of which pull Trailers—have  
made a remarkable record in the service of  
the Monitor Stove Company, of Cincinnati.

The two 3½ ton trucks are equipped with re-  
movable bodies—three bodies for two trucks.  
One truck leaves the extra body at the plant and  
it is loaded before the other comes in. An extra  
trailer is loaded in the same way.

The greater speed at which the Schacht Trucks  
with ten-speed transmission enable a load to be  
taken through under all sorts of conditions, and  
the efficient modern way in which these trucks  
are used have resulted in a very low cost of  
operation.

*Write for the facts about this remarkable truck  
It offers a tremendous dealer opportunity*

**The G. A. Schacht Motor Truck Company**

CINCINNATI, OHIO

BRANCHES: NEW YORK AND CHICAGO

Export Department: 237 Hancock Street, Long Island City

**Schacht Motor Trucks**

When Springs Break  
put on

**VULCAN**  
QUALITY  
**VULCAN**  
AUTOMOBILE SPRINGS

IN STOCK FOR YOUR CAR

*This is the VULCAN service sign*

### The Sign of Profit

This sign stands for America's  
highest quality replacement-spring.

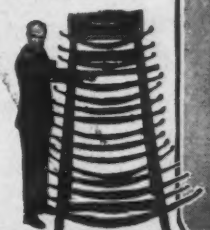
This Sign brings thousands of motorists,  
every year, to the doors of over 7000 dealers  
who display it.

This sign puts large and ever-increasing  
profits into the cash-drawer of every one of  
these dealers.

*If Your Jobber Cannot Supply You,  
Write Us Today.*

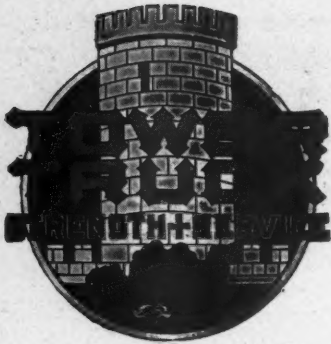
Jenkins VULCAN  
Spring Company

Factory  
Richmond, Indiana



*This Spring Rack FREE with  
first order for 12 or more  
VULCAN springs.*





1½, 2½, 3½  
and 5  
Ton Models

*"The Freight Car  
of the Highways"*

## Repeat Orders

Tower Growth is a consistent growth—built on *Dealer, Owner and Driver* unreserved approval.

Repeat orders, in themselves, have proved Tower trucking qualities which embody *Brute Strength, Handling Ease and Economical Maintenance.*

Write or wire today for catalog and Dealer's Franchise.

Your territory may still be open.

Direct Factory Branches:  
Minneapolis                      Chicago  
Indianapolis                      Detroit

**TOWER MOTOR TRUCK CO.**  
Greenville                      Michigan

## COUNTERBALANCED PARK CRANKSHAFTS

Patented July 10, 1917



We have  
shipped 111,802  
Counterbalanced  
Crankshafts up to  
August 5, 1920

**THE PARK  
DROP FORGE  
COMPANY**  
Cleveland, O.



## EGYPTIAN FIBRE

This is the toughest, most durable fibre known and is used by many truck makers for washers, gaskets, bushings, because of its superior qualities.

It is very durable, free from carbon, hard, and close-grained, slow to absorb and very resistant to shock.

Send for samples or consult our development department regarding their use in your trucks.

**Delaware Hard Fibre Co.**

**Wilmington, Del.**

NEW YORK OFFICE:  
1358 Hudson  
Terminal Bldg.

CHICAGO OFFICE:  
564-570 W. Monroe St.



## OLSON Converting Units

for the

**Ford Pleasure Car  
Ford One-Ton Truck**

The Olson Unit makes a one-ton truck of the pleasure car. Easily installed. Solid or pneumatic tires on rear wheels.

Price, list, without tires, \$85.00.

Price with tires, \$150.00.

By the installation of Olson Frame Extension with Side Springs on the Ford truck chassis bodies up to 6 x 15 ft. can be mounted.

Prices from \$150.00 to \$250.00

*Write for Dealer's Proposition*

**Swedish Crucible Steel Company**

Motor Truck Department

**DETROIT, MICHIGAN**

*Direct Factory Branches in New York, Chicago, Indianapolis*

# Berling

WORTH MORE

# Magneto

DOES MORE

ERICSSON MFG. CO.  
BUFFALO, N. Y.

# DENBY

## MOTOR TRUCKS

IN those kinds of hauling where roads and loads and weather conspire to destroy a truck in its very prime, Denby lasts and *lasts* and **LASTS!**

Denby Motor Truck Co.  
Detroit, Mich.



**DENBY MOTOR TRUCK CO**  
**DETROIT, MICHIGAN**

## Not Just *Pistons* but Pistons that are *Just Right*

TO give the proper service a piston must be just right, and properly fitted. Otherwise there is great likelihood of scored cylinder walls and a new repair bill of generous proportions.

We have learned the secret of fitting over-size pistons for perfect safety and positive performance. Part of this secret consists of the special formula used in making our castings. Another part is the seasoning and special heat treatment which all our piston castings undergo. The third part consists of the perfect workmanship produced by a modern department manned by experts for regrinding cylinders and fitting over-size pistons.

*A trial order will make you our  
regular customer*

Modern Electric & Machine Co.  
936-40 Fort Wayne Ave.  
INDIANAPOLIS  
INDIANA

**CYLINDER REGRINDING  
and PISTON SERVICE**

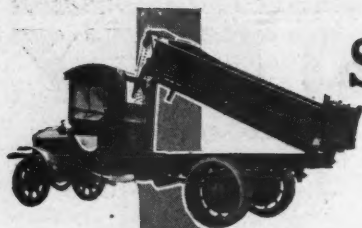
## The LAW of LUBRICATION

FOR EVERY MACHINE, of  
EVERY DEGREE of WEAR there  
is A SCIENTIFIC SINCLAIR  
OIL to SUIT its SPEED AND  
CONSERVE its POWER.

Sinclair Refining Co. Chicago







## Steel Dump Bodies

Your Dump Body requirements handled by specialists. Standardized models—or made precisely to your specifications.



## Truck Radiator Guards

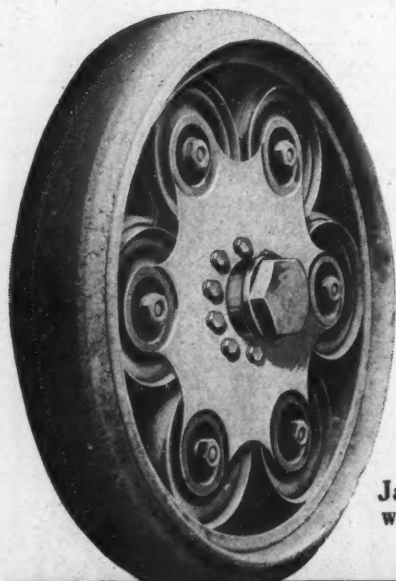
You effect greater distribution when your truck is Stewart Radiator-Guard Equipped. Our Engineering Department will be glad to advise you whether flat bars, channel or angle sections be used.

We can also efficiently supply your steel cab and steel dash needs. Write.

The Stewart Iron Works, Inc.  
Cincinnati Ohio

**STEWART SPECIALTIES**

## MAXIMUM PRACTICAL RESILIENCY



The JAXON FULL-FLOATING WHEEL embodies seven points of shock absorption—the rubber of the tread, plus the six solid rubber cushions within the wheel itself.

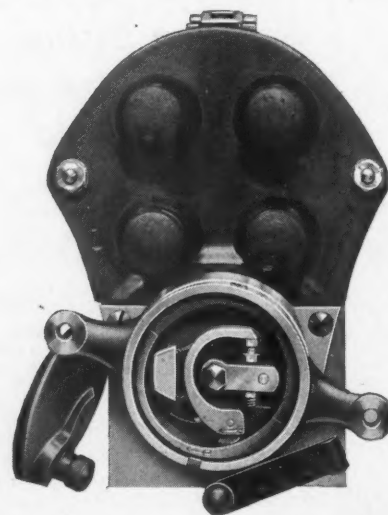
Jaxon Steel Products Co.  
Wheel Division: 3066 W. Grand Boulevard  
Detroit, Michigan

**JAXON**  
FULL FLOATING WHEELS



THIS tag is the sign of the "Tenth Year Federal." It is attached to every Federal truck purchased this year and is significant of the experience and responsibility of a company that, in the past ten years, has produced more than 50,000,000 dollars worth of successful motor trucks.

FEDERAL MOTOR TRUCK CO.  
DETROIT, MICHIGAN



## Simplicity and Quality Built Into a Magneto

THE APOLLO, with fewer parts than any other magneto, represents the utmost in *simplicity and quality*—two attributes absolutely essential to successful commercial car service.

*Write for catalog fully explaining the many ingenious refinements of the Apollo Magneto*

**APOLLO MAGNETO CORP.**  
87 Grand St. Kingston, N. Y.



## In the Front Ranks of Proved Units

Discriminating automotive engineers are only interested in proved units. Hence: the immediate adoption of Model B Universal Joints.

Oil is force fed to Oversize Bearings by centrifugal action, insuring positive, constant lubrication and dependable performance. A single opening feeds entire Model B joint.

No companion flanges required. Bushings completely supported.

*Details on request*

**Blood-Bros. Machine Co.**

Pioneer Builders of Universal Joints

Allegan

F. Somers Peterson Co.  
San Francisco, California  
Western Representative

Michigan

## A Few Dollars More for Quality

The WISCONSIN is not built for the man who wants a cheap motor. Rather for the man who considers the ultimate cost and the cost-per-year of his car or truck.

*Wisconsin*  
CONSISTENT

### MOTORS

are ready to run when they leave the factory. The price is a trifle higher, because of superior workmanship—adjustments, running-in, testing, rigid inspections. But you save in the end, because the motor is finished.

*Write for Specifications*

**WISCONSIN MOTOR MFG. CO.**

Sta. A, Dept. 320

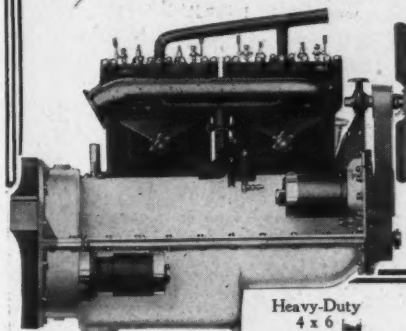
Milwaukee, Wis.

#### DISTRIBUTORS:

New York Branch:  
T.M. Fenner, Factory  
Rep., 21 Park Row,  
New York, N. Y.

California Distributor:  
Earl P. Cooper  
Co., Los Angeles, Cal.

Northwest Distributor:  
Chandler-Dunlap  
Co., Seattle, Wash.



Heavy-Duty  
4 x 6

**F**OR giving maximum mileage and the greatest measure of protection to loaded trucks, Fisk Truck Tires are unsurpassed. They save money for you.

# FISK

## TRUCK TIRES

## DETROIT TRAILERS



### REVERSIBLE TRAILERS

For Motor Trucks and Tractors, also Pole, Semi- and Passenger Car Trailers.

Special dropped frame trailer with low gravity dump body for public work.

The best tracking and backing trailers in the market.

Take an agency and be happily prosperous.

*Send for particulars*

**DETROIT TRAILER CO.**

35 JOS. CAMPAU AVE.

DETROIT, MICHIGAN

Branch for Canada: Walkerville, Ont.



# CHAMPION



## DROP FORGINGS

Keen competition demands the best quality. If drop forgings enter into the construction of your products, it will pay you to use the best, in other words—

**CHAMPION DROP FORGINGS**

The **Champion Machine & Forge Co.**  
CLEVELAND, OHIO

## Make Your Truck



By Equipping It With



## Safety Grips

A Real Proposition for  
Jobbers and Dealers

**American Business Corporation**

Automotive Division  
1780 Broadway

New York



## The Three Vital Links of the Truck Chain

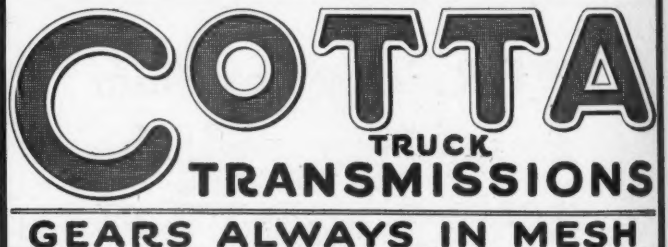
**Atlas Motor:** Maximum power at the speed you drive—22 miles per gallon of low-grade fuel (unloaded).

**Atlas Transmission:** A 100% perfect job—we have never had to replace a single broken part.

**Atlas Worm-Drive Rear Axle:** Every worm-drive advantage, without the excessive weight—readily accessible—fool-proof in adjustment because of the three-point bearing.

*Individualized Body Equipment  
for Every Business*

**ATLAS TRUCK CORPORATION**  
YORK, PENNSYLVANIA



**COTTA TRANSMISSIONS**  
sell Cotta-equipped trucks!

We have proved that fact to many leading truck manufacturers and their dealers. The advantages of Cotta Transmissions are so obvious and convincing that the prospect is often swayed by this one unit alone.

Let us tell you more about Cotta Transmission and the guarantee that goes with it.

Write for Our Literature

**Cotta Transmission Company**

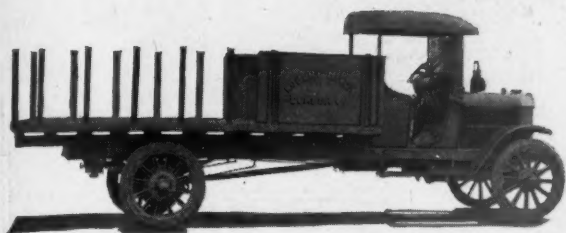
*Largest Exclusive Makers  
of Truck Transmissions*

Rockford

Illinois



**In UNION  
There is Strength**



The Robert Hixon Lumber Company, Toledo, Ohio, purchased one Union Truck in 1917—one in 1918—and one in 1920.

It's repeat order business like this that has established the Union reputation and makes the first sale easy.

*New Territory is being opened. Let us tell you about our dealer proposition*

## UNION MOTOR TRUCKS

Union Motor Truck Company  
Bay City, Michigan

## Wheels and Rims

For PNEUMATIC TRUCK TIRES



We furnish promptly, any sizes from 32 x 4½ inches to 42 x 9 inches and to fit the hubs of any make of truck.

Send for Price List D

**LUVERNE MOTOR TRUCK COMPANY**  
**LUVERNE MINNESOTA**

Manufacturers of TRUCK PARTS

**GOES  
ON  
LIKE A HUB CAP**



The Dreadnaught Indestructible Hub Odometer with Automatic Drive may be had at the following prices:

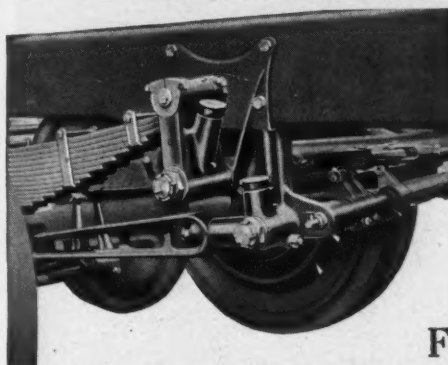
Ford and Maxwell model \$17.00  
For all other motor vehicles \$20.00

Write for booklet and list of sales and service stations.

**AMERICAN TAXIMETER CO.**

20 West 61st Street

New York, N. Y.



The Old-Fashioned Wick System Fills a New-Fashioned Need

DEVELOPED from the principle of a wick in an oil lamp, the automatic lubrication of the *Ward La France Motor Truck* is the most advanced system of lubrication ever devised. The oil is supplied to the Spring Shackles, Radius Rods, the Brake Mechanism and Drag Link Assembly just as it is needed. None is wasted—it cannot cake like grease and lubrication does not flow when the truck is idle, which is a saving. It will remain lubricated without refilling longer than any other truck on the market.

This Exclusive Lubrication System is a big aid in selling. Send for full particulars about Dealerships.

Model 2B....2½ ton....\$3590.00  
Model 4A....3½ ton....4490.00  
Model 5A....5 ton....5490.00

**Ward La France Truck Corp.**

Elmira, New York, U. S. A.

Desk 18







Specialists in  
**CHEVROLET, MAXWELL**  
**Drive Gears and Pinions**

for  
**Repair and Replacement**

ACCURATE — RELIABLE — QUIET

Weekes-Hoffman replacement gears and pinions are made from alloy steels specified for gear purposes by the Society of Automotive Engineers, thus assuring materials of exceptional density and toughness. All gears and pinions machine finished, with bores accurately ground. Heat treated and tested for operation and endurance.

Chevrolet and Maxwell repairs and replacements in standard ratios.

Every garage and repair shop needs these in stock.

*Write for complete details  
and attractive proposition*

**Weekes - Hoffman Co.**

Syracuse, New York

U. S. A.

Cable Address: "WEHOFFCO" Code: Western Union



**E. & W.**  
MILWAUKEE

**The Biggest Trailer  
Value on the Market**

**W**RITE now for fully descriptive-illustrated E. & W. Trailer Catalog—know the advantages of this reversible type trailer, and why it is the biggest trailer value on the market. 2½, 3½ and 5 ton. *Write now.*

**Dealers:** Get our attractive dealership offer for your territory. *Write now.*

**E. & W. Company**  
Milwaukee, Wisconsin

THE HAND MADE TRUCK

# KALAMAZOO

1½-2½-3½ Tons Capacity

An opportunity for distributors capable of handling a high-grade motor truck of proven merit.

*Write for particulars covering territorial rights, etc.*

**Kalamazoo Motors Corporation**  
(MOTOR TRUCK DIVISION)  
Kalamazoo, Mich. U. S. A.

# IRON CITY Springs

Pyrometrically controlled heat treatment and thorough testing assure dependable performance. Let us quote on your needs

have earned their present prestige and sound reputation as a result of dependable service and performance. Truck makers who include them in their assemblies know that they can place the full measure of responsibility upon them.

**Iron City Spring Company**  
Pittsburgh, Pa.  
Factory Representative  
THOMAS J. WETZEL  
New York Detroit



## Starting and Lighting Systems

are simple in construction, compact and neat in appearance, and unusually durable — they will outlast most cars. The Dyneto Generators are ball bearing instruments while most other generators used for automotive purposes have only bronze bearings. Dyneto instruments are built to last.

Here are some of the Dyneto-equipped cars and trucks:

Brockway	Geronimo	Monitor
Climber	Hatfield	Norwalk
Comet	Holmes	Piedmont
Commonwealth	Huffman	Stewart
Crow-Elkhart	Jackson	Texas
Dixie	Kalamazoo	Tulsa
Franklin	Luverne	Watson

**DYNETO ELECTRIC CORPORATION**  
SYRACUSE, N. Y.



## Converted Trucks Net You Fine Profits

The production of motor cars has again reached a point where the used car is the dealer's problem. Let us solve that problem for you.

Our attachment of 1½, 2 or 3 ton capacity will convert any make of passenger car or light truck. The farmer, the merchant, the milk dealer, the manufacturer, are all prospects and your new passenger car sales are promoted as well.

The Reo Speed Wagon, or Olds Economy Truck, new or used, will make a 2 or 3 ton truck that cannot be duplicated for anywhere near the money.

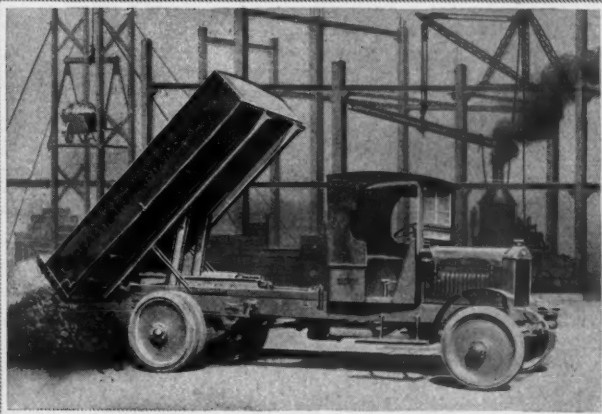
1. 1½, 2 and 3  
Ton—\$455.60,  
\$850.00.

The profit to dealers warrants an earnest sales effort in our line. Russel Internal Gear used on all models.

*Write us for our proposition*

**CARRIER MOTOR TRUCK COMPANY**

1685 Gratiot Avenue, Detroit, Michigan



## In Service—

The dependable ability to deposit any load exactly where it is wanted is one of the reasons for the popularity of HORIZONTAL HYDRAULIC Dumping Units.

**HORIZONTAL HYDRAULIC HOIST CO.**

31-37 Twenty-fifth St.

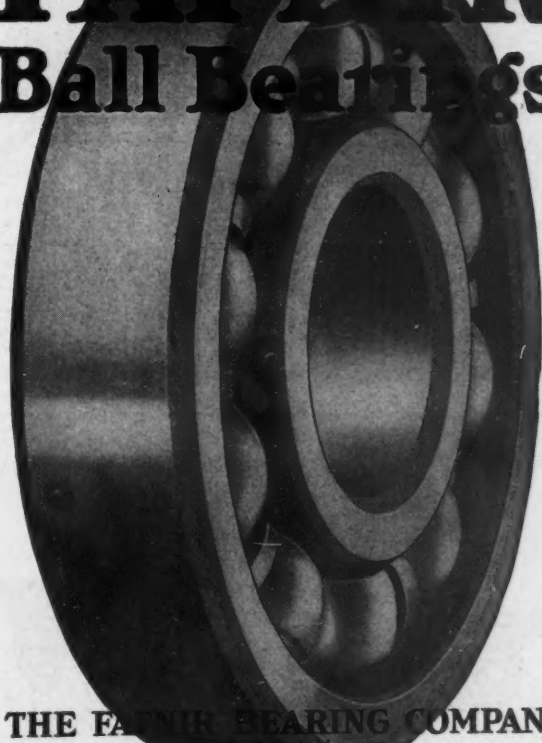
Milwaukee, Wis.

Sales and Service Stations:

Chicago, Ill.  
3755 Wentworth Ave.

Detroit, Mich.  
605 Gratiot Ave.

# FARNIR Ball Bearings



**THE FARNIR BEARING COMPANY**  
New Britain, Conn.

DETROIT Office, 752 David Whitney Bldg. CHICAGO Office, 1301 Michigan Ave.  
CLEVELAND Office, 916-917 Sweetland Bldg.





*Tool Locked in Position  
for Removing or Replacing Tire.*

**K.P. Universal  
Rim Tool**

Price \$4.00

### ***The easiest way to remove tires from split rims***

Fits all types of cross-cut demountable rims in use today.

Collapses a rim no matter how badly a tire may be stuck to it.

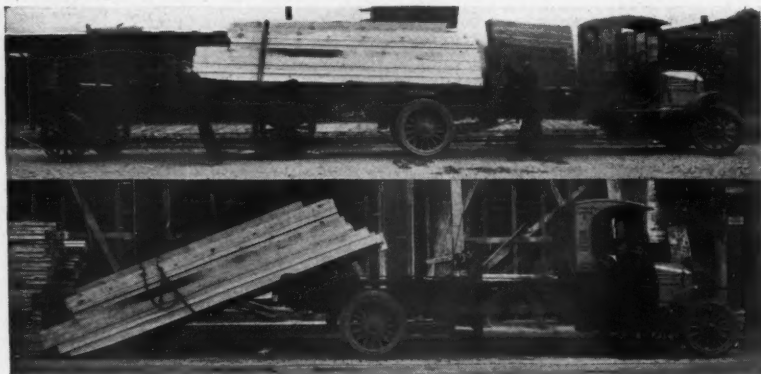
Forces the rim back on the tire again with the utmost ease—even in the case of new tires which are undersized.

Locks rim collapsed while tire is being removed or replaced.

**The K. P. Products Co., Inc.**  
250 West 54th St., New York

Pacific Coast and Intermountain Representatives:

Norton-Munter Co., 1603 L. C. Smith Bldg., Seattle, Wash.



*Dealers write for prices and descriptive catalog*

### **McGarry Patented Lumber Loading and Unloading Device**

Furnished for any make of truck trailer, yard stand or gathering wagon

Standing trucks an *expense*

Moving trucks an *income*

**McGarry System Proves 100% Efficiency**

**THE JNO. A. McGARRY CO.**

2136-46 So. Ashland Ave.

CHICAGO



**"IT NEVER  
FAILS"**

High Tension  
Dust-Waterproof



**"IT NEVER  
FAILS"**

Adopted by the  
Allied Governments

### **QUICK REPAIR SERVICE**

The construction of the Lauraine is the most advanced idea yet perfected in magneto design. Divided into 14 divisional units, easily disassembled and replaceable, the necessity of removing intricate parts is avoided. Lauraine Service consists of supplying an entirely new unit in place of the one needing repairs. It's easy for a mechanic to remove a unit—it's difficult for him to take apart an entire magneto. Speed—Economy—Service are accomplished by the Lauraine construction.

**LAURAINÉ MAGNETO COMPANY, INC.**

13th Street and Ely Avenue

LONG ISLAND CITY, N. Y.



### **THE DUTY TRUCK**

A powerful, rugged TWO-TON TRUCK, with overhead valve motor; heavy standard units; S. A. E. specifications.

Chassis, with bumper, tool box, lights, seat and tool equipment. Price \$1490 f. o. b. factory.

**DUTY MOTOR CO.**

**Greenville, Ills.**



## SNEAD

CUSHION DRIVE

## SHAFTS

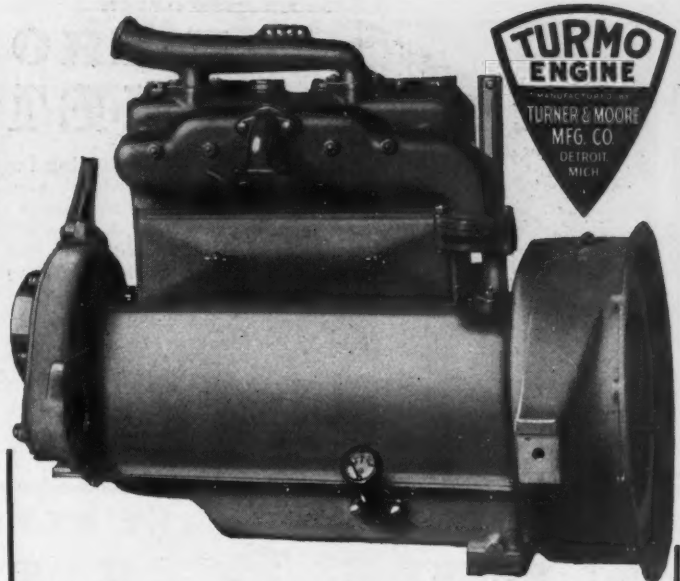
FOR TRUCK AND PASSENGER  
CAR MANUFACTURERS WHOSE  
STANDARDS DEMAND THAT  
EVERY DETAIL OF THEIR EQUIP-  
MENT AS TO WORKMANSHIP,  
MATERIAL AND DESIGN SHALL  
BE THE

BEST OBTAINABLE

**Snead & Company**

Jersey City New Jersey

WE SOLICIT INQUIRIES



## Turmo Four Cylinder Engines

Two Sizes: 3 in. x 5 in. and 3½ in. x 5 in.

Full pressure gear pump lubrication through hollow  
crankshaft to all bearings.

Highly efficient dry gas hot-spot manifold.

EXCELLENT THERMAL EFFICIENCY  
S. A. E. STANDARD MOUNTINGS FOR ALL  
ACCESSORIES

**Turner & Moore Mfg. Co.**

32 Merritt Ave.

Sales Offices: 521 Stevens Bldg.  
Detroit, Mich.



**GOOD YEAR**  
CORD TIRES

SAVE DRIVERS, LOADS,  
TRUCKS AND ROADS

# APEX

## TRUCKS

*"The High Point of Truck Service"*

APEX DEALERS find slight sales resistance  
when demonstrating the APEX. Few  
trucks can claim as many features that  
make for strength, service and all-around de-  
pendability. They are built in an exclusive truck  
factory by experts.

We have a profit-making proposition to offer  
capable truck merchants at points where we  
are not now represented.

1 Ton, \$1745

1½ Ton, \$1915

2½ Ton, \$2695

*These prices subject to change without notice*

**HAMILTON MOTORS COMPANY**

Grand Haven, Michigan

Export Department: 25 Beaver St., New York  
Cable Address, "Hammoter," New York





"Attracting and holding 250 pounds of girls"

## NIEHOFF MAGNETIZER

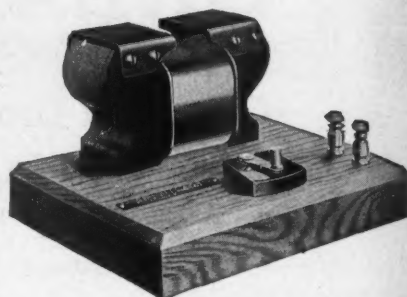
This is a new type of Magnetizer, based upon scientific and economical principles. You could not get a better outfit at any size or price. It is guaranteed to fully recharge all makes of magnets, such as are used on automobiles, trucks and tractors. It has a pulling capacity of 250 pounds by test. The Niehoff Laminated Magnetizer is constructed to last a lifetime. The parts that are subject to wear, after long usage, can easily be replaced at a small cost.

Get this outfit and know that you are equipped with the finest and most efficient Magnetizer made.

**PAUL G. NIEHOFF & CO., INC.**

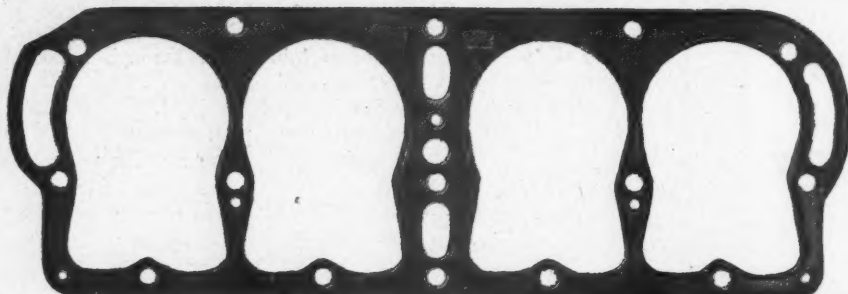
244 E. Ohio St.

Chicago, Ill.



Made in two types for 6-volt storage battery and for 110 D. C. Current

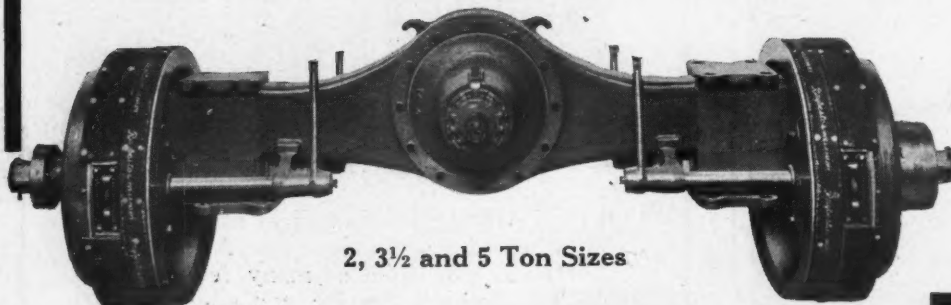
## ON ALL GASKET REPLACEMENT JOBS USE NEVER-LEAK CYLINDER-HEAD GASKETS



Not only are they the best and tightest but they cost less than other good gaskets. There's a Never-Leak gasket for every size and make of truck and passenger car. See that your stock is complete, for service stations report a continued demand for them.

**The Fitzgerald Mfg. Co.**  
Torrington Conn.

## ATLAS AXLES



2, 3½ and 5 Ton Sizes

THE hollow, light-weight load-carrying member is a one-piece cast-steel box girder. Due to the unique disposition of all the metal in relation to the neutral axis, its extreme stiffness, strength and resistance to deflection is vastly greater than that of a solid axle of equal weight. A copy of our bulletin gladly sent on request.

**American Machine Co.**  
Newark, Delaware



Peerless Hoist, Showing Body Hitch  
Worm and Gear, Machine Cut  
We Furnish Body Hitch

### The Only Logical Choice for Dealers

There is every reason why the Peerless is the logical hoist for you to sell. The discount is so liberal that your time is well paid for and a handsome profit is earned on every sale. The price appeals to your customers, as it is from one-third to one-half lower than the cost of other hoists.

But profit and price would make little appeal if you did not conscientiously believe that the

### Peerless Hand Hoist

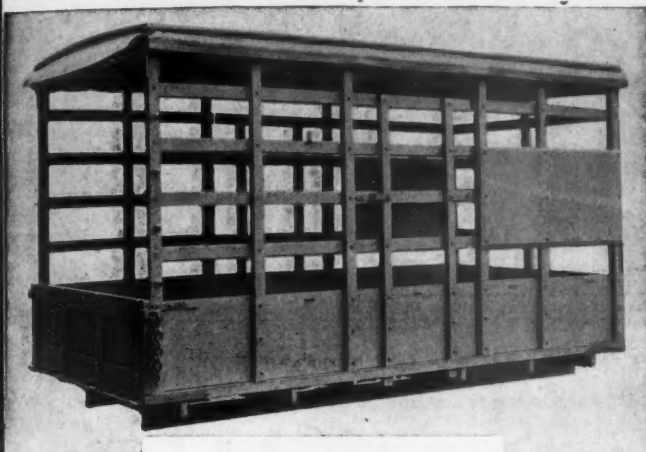
was superior in mechanical perfection and operation to any other lifting apparatus made. Rest content! It is the only efficient hoist that can be attached to either steel or wood bodies. It is the only efficient hand hoist that sells at a moderate price. These are pretty strong reasons why you should consider its sales possibilities. An operator can hoist from one to four tons in from one to four minutes. What more could be required on speed! You are getting calls for hoists and are often undecided as to which hoist to recommend. We'll tell you why the Peerless fills the bill every time. Will you let us?

Alsteel Bodies Guaranteed to Take Care of 100% Overload Under Rough Usage

**The Auglaize Motor Car Company**  
New Bremen, Ohio

## METROPOLITAN STANDARD TRUCK BODIES

32 Styles IMMEDIATE DELIVERY 1 to 5 Ton



"Made by METROPOLITAN" assures you of quality that will stand rough wear and hard bumps and still give service that you can always rely on—we guarantee it.

*Write for Catalogue*

**METROPOLITAN BODY COMPANY**  
BRIDGEPORT, CONN.

## ALL-AMERICAN MOTOR TRUCKS

HERE'S a new one. An All-American user in New Jersey couldn't wait for freight or express deliveries. So he came on to Chicago and drove his second All-American overland across the mountains of Pennsylvania.

So enthusiastic is he that he has written up the trip for advertising purposes.

The point is that the All-American is built to perform because performance is the main objective of every soul concerned in the production of All-American Motor Trucks.

**ALL-AMERICAN TRUCK COMPANY**  
CHICAGO ILLINOIS



## MOTOR WHEEL CORPORATION

Manufacturers of Motor  
Vehicle Wheels Complete  
—Metal Stampings, Steel  
Products

**LANSING, MICHIGAN**

*Prudden Wheel Plant, Lansing, Michigan*  
*Auto Wheel Plant, Lansing, Michigan*  
*Gier Pressed Steel Plant, Lansing, Michigan*  
*Weis & Lesh Plant, Memphis, Tennessee*



# BAKER

**AUTO TRUCK SNOW PLOW**  
A Universal Attachment to Standard Trucks

This modern way of moving snow opens a new field for motor trucks. The Baker Snow Plow can be attached to the axle of all standard trucks. Easily raised and lowered. Protected from injury by spring hinged blades.

Motor truck dealers should investigate our selling plan at once. A good field is open for them.

*Write for Descriptive Literature*

**The Baker Mfg. Co., 571 Stanford Ave., Springfield, Ill.**





Get Catalogue 501

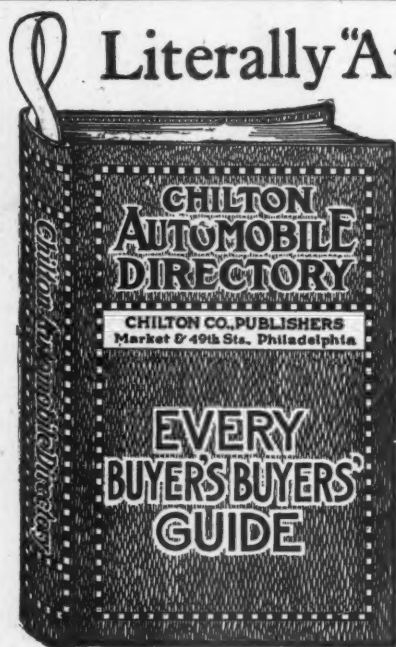
Builders of

## Standardized Bodies for Heavy-Service Motor Trucks

**The Kilbourne & Jacobs Mfg. Co.**

Columbus, Ohio, U. S. A.

Offices at New York and London



## Literally "At Your Fingers' Ends"

is just the information you want about sources of supply for parts, tools, appliances and accessories, if you have a copy of

## CHILTON AUTOMOBILE DIRECTORY

It tells you what you want to know, when you want it

Issued quarterly:

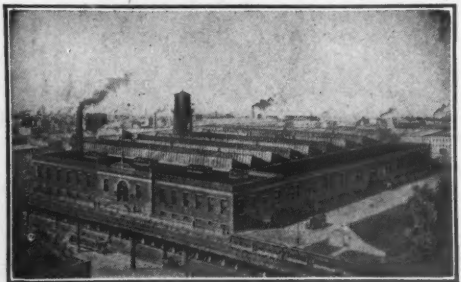
In January, April, July and October

Price, \$5.00 per copy

One day's use will prove to you its value as a time-saver.

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Chilton Company, Publishers, Market and Forty-Ninth Streets, Philadelphia, Pa.



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**A**n annual investment of but \$5520 enables you to completely cover the automobile trade in all its ramifications. This sum pays for a year in each of the three CHILTON publications: AUTOMOBILE TRADE JOURNAL, COMMERCIAL CAR JOURNAL and CHILTON AUTOMOBILE DIRECTORY, and the free use of the CHILTON TRADE LIST.

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**CHILTON COMPANY**

PUBLISHERS

Market and 49th Streets

Philadelphia, Pa.

# CULLMAN SPROCKETS

in stock and to order



For Block, Roller and High Speed Silent Chains  
New Catalog

**Cullman Wheel Co., 1351 Altgeld St., Chicago**

We offer our services to the engineering fraternity on layouts requiring Ball Thrust Bearings. Our broad engineering experience in Ball Bearings is at your disposal.

Ball Thrust Bearings manufactured to your requirements.

"Star" Ball Retainers for Thrust, Magneto and Cup and Cone Bearings.

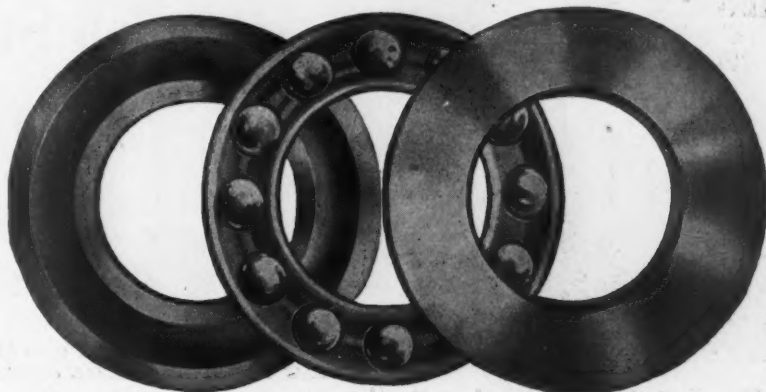
**DROP FORGINGS**

**THE BEARINGS CO. OF AMERICA**

Lancaster

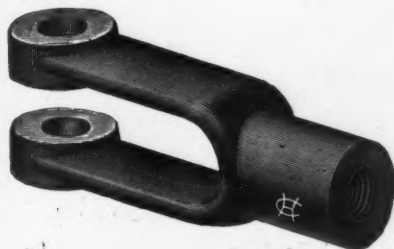
Penna.

Detroit, Mich., Office: 1012 Ford Bldg.



## ADJUSTABLE YOKE ENDS

S. A. E. STANDARD



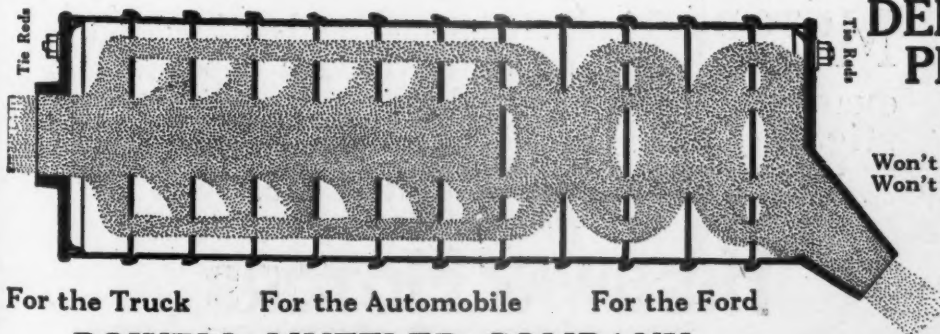
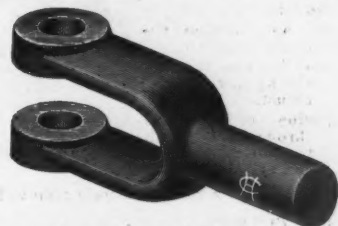
**WE** make all sizes  
of Yoke and Rod  
Ends

Automotive Forgings  
shown in our *Catalog 14-A*

**THE CLEVELAND  
HARDWARE COMPANY**  
Cleveland, Ohio

## PLAIN YOKE ENDS

S. A. E. STANDARD



For the Truck For the Automobile For the Ford

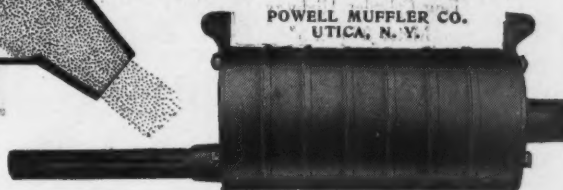
**POWELL MUFFLER COMPANY**  
UTICA, NEW YORK

## DEMAND POWELL PRESSED-STEEL MUFFLERS

Won't Blow Up  
Won't Leak

No Loss of Power  
No Repairing

**POWELL MUFFLER CO.**  
UTICA, N. Y.





## SUPERIOR STAMPINGS—FAULTLESS FORGINGS

FOR THE

TRUCK—TRACTOR—AUTOMOBILE—BUGGY—AEROPLANE

INCLUDING

FENDER IRONS, BOTH FORGED AND STAMPED—STEP HANGERS—CHASSIS IRONS

COMPLETE FITTINGS FOR TRUCK TOPS—SPECIAL WORK

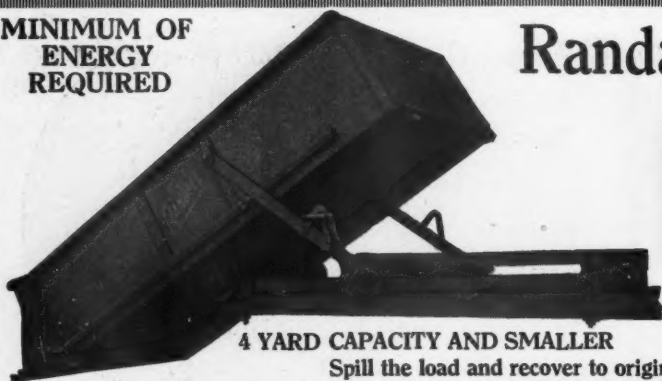
SPLENDIDLY EQUIPPED FOR BIG BUSINESS IN BIG QUANTITIES

SEND US YOUR INQUIRIES

THE BREWER-TITCHENER CORPORATION

CORTLAND, NEW YORK

MINIMUM OF  
ENERGY  
REQUIRED



4 YARD CAPACITY AND SMALLER

## Randall Steel Dumping Bodies

IMMEDIATE DELIVERIES



2 TO 4 REVOLUTIONS OF CRANK DUMP THE LOAD

Spill the load and recover to original position in less time than any other dumping device

SOME TERRITORIES STILL OPEN FOR AGGRESSIVE DEALERS

Randall Steel Dumping Bodies Company

Sales Dept., 814 Hearst Bldg.

Chicago, Ill.

## REAM UNIVERSAL JOINTS

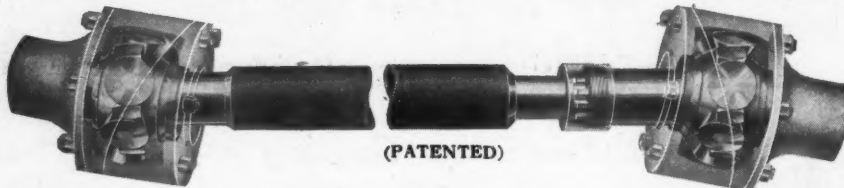
Ball and socket and  
full roller bearing.  
Oscillation impossible.  
No backlash.

Do not develop ve-  
locity variation.

No damage through  
the agency of end-  
thrust.

Spline end extends  
through the ball,  
providing equal pressure on inner and outer  
end of ball.

All traces of whip are entirely removed.



(PATENTED)

No loss of power to deflect.

Perfect relative alignment under all conditions.

No noise—roller bearing.

Positively does not  
waste lubrication.  
Extraordinary long  
life.

Made entirely from  
forgings and bar  
stock.  
Unequaled and un-  
qualified service.

Repair shops, dealers,  
jobbers—ask us  
about replacement

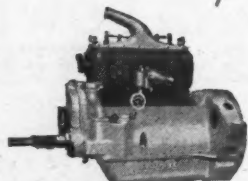
assemblies for any truck or car—all sizes.

Quantity production for manufacturers.

Send for catalog—contains complete detail.

R. S. Manufacturing Co., Kansas City, Missouri

Plant and Works: Dayton, Ohio



Four-Cylinder Highway  
Motor 3 3/4" x 5"

**M**OTOR efficiency, refinement and satisfaction,  
multiplied many times through dependable  
quantity production—this is the service that  
Highway offers to the automobile industry.

The Highway Motors Co.

Defiance, Ohio

## HIGHWAY MOTORS

Successors to G-B&S motors

AUTOMOBILE—TRUCK—TRACTOR



## MOTOR TRUCKS

Wisconsin Motor  
Sheldon Worm Drive  
Bosch Ignition

Cotta Transmission  
Ross Steering Gear  
Zenith Carburetor

Equipment includes cab, windshield  
and radiator guard.

"ALWAYS SOMETHING IN RESERVE"

**Aetna Motors Corporation of New York**  
617 West 57th St., New York City

Write or telegraph for information regarding  
desirable territory still open for dealers.

1½ Ton  
2½ Ton

3½ Ton  
5½ Ton

## SUPREMACY

in the Class of  
1 Ton and 1½ Ton Models

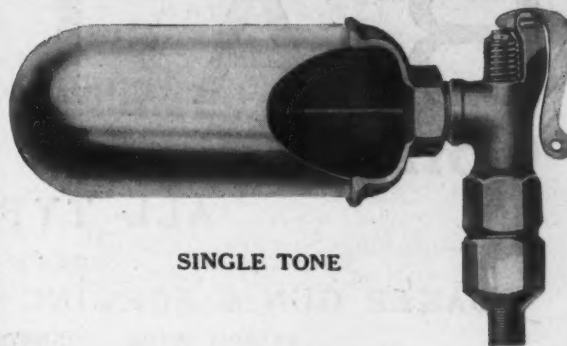
The rise of Napoleon Motor Trucks in 1 and 1½ ton capacities is simply the logical result of sheer mechanical merit and perfect performance. Ample in power, economical in operation, Napoleon Trucks combine extraordinary qualities at an amazing price. Send for complete descriptions of Napoleon Trucks, and compare these features with designs found in trucks around \$2000. The 1 ton Napoleon sells for \$1285.

These features have been designed by men with 15 years' experience in truck engineering.

INVESTIGATE THE  
NAPOLEON DEALERSHIP

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Traverse City, Michigan

Export Sales Department  
American Motors, 100 Broad St., New York City  
Pacific Coast Representative  
F. E. Gerlinger, Santa Marina Bldg., San Francisco, Cal.



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**BUELL**  
EXPLOSION WHISTLE  
WARNS EVERY TIME

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**Buell Manufacturing Company**  
Cottage Grove at 30th, Chicago



CHIME MODEL



# BATAVIA

## Control Sets

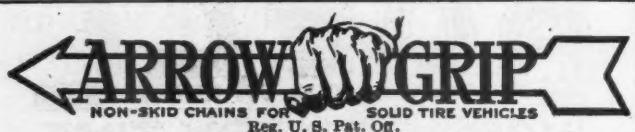
## Universal Joints

### ALL TYPES AND SIZES

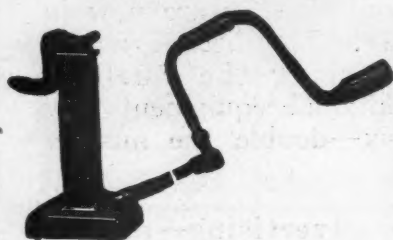
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**BAKER GUN & FORGING COMPANY, BATAVIA, NEW YORK**

DETROIT OFFICE: LONNEY & CARMICHAEL, 967 1/2 WOODWARD AVE.  
SAN FRANCISCO OFFICE: S. C. KYLE, RIALTO BUILDING



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**The Jack That  
Wheels Under the  
Car and is Handle-  
Controlled**

The Arrow Grip Jack overcomes the car owner's chief objection to old-style jacks—the necessity of climbing underneath the car to adjust the jack in position with consequent back-breaking effort and soiling of clothes and hands.

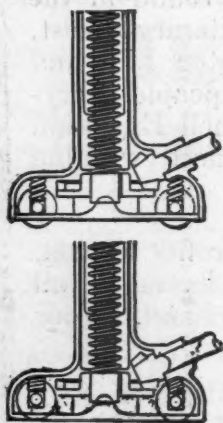
For the Arrow Grip Jack operates on a roller base, enabling the operator to ACTUALLY WHEEL IT BENEATH THE CAR by means of the long extension handle.

The wheels depress into the base and the jack is raised. The weight is balanced in the base—no danger of toppling over.

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Its exclusive features make repeat orders certain.

Its tremendous sales appeal assures liberal profits.



**ARROW GRIP MFG. CO., INC.**  
Glens Falls, N. Y.

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## FOUR WHEEL DRIVE TRUCKS

**Push and Pull in All Four Wheels**

The truck with the uncanny ability to pull out of hopeless traction difficulties.

**3 1/2 Tons Capacity**

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**JACKSON MOTORS CORPORATION**

Sales Dept. 131

Jackson Motors Bldg.

Jackson, Mich.



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Do you want good drivers?

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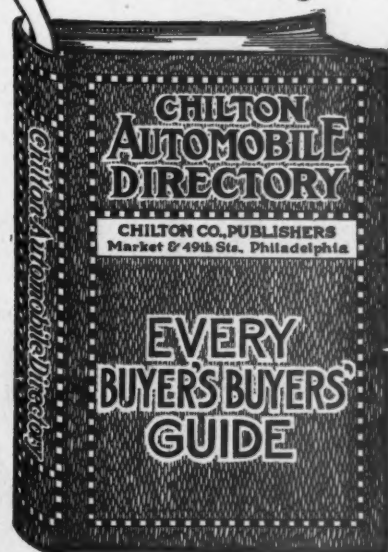
Our new modern equipped factory assures prompt attention to your special requirements.

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Kansas City, Mo.

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We have some open territory.

We can make immediate deliveries.

Our proposition to dealers is the most liberal to be had anywhere.

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1, 1½, 2½, 3½ and 5 ton. Special Motor Bus. Special Farm Wagon. Special Tractors.





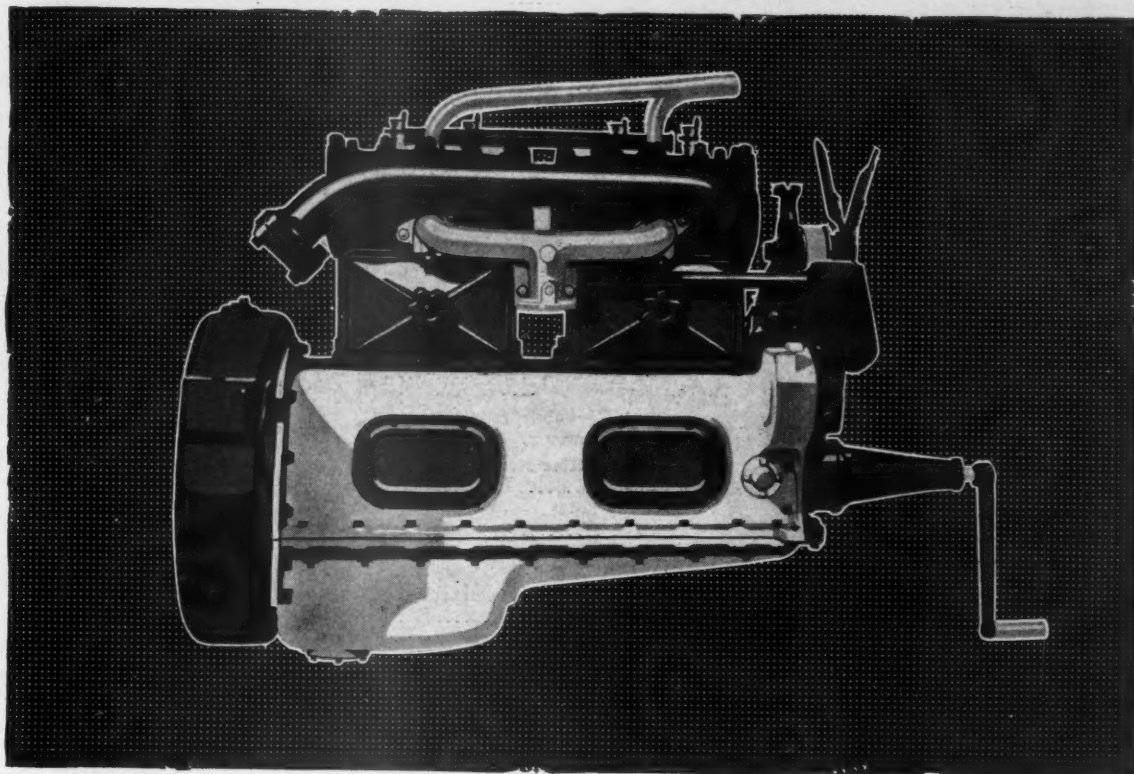
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**WAUKESHA MOTOR COMPANY, WAUKESHA, WIS.**

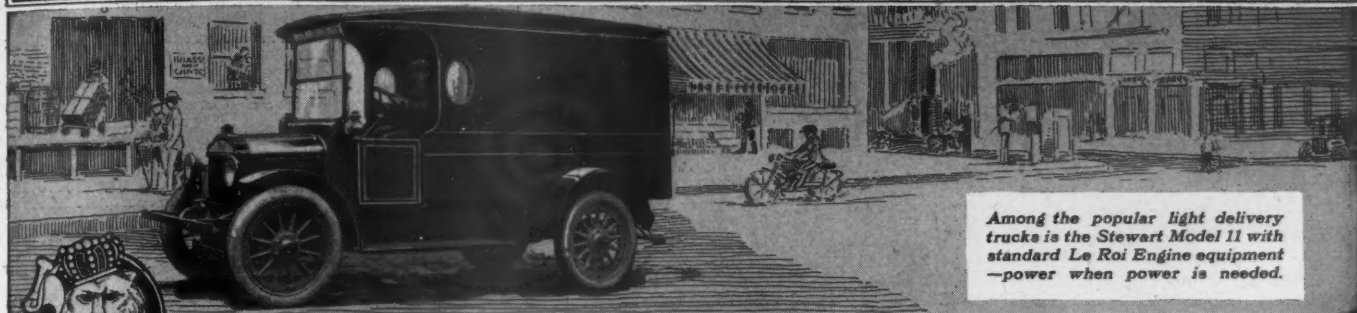
*The World's Largest Builders of Tractor and Truck Motors Exclusively*



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Statistics show that fully 65% of all motor trucks are one-ton capacity or smaller. Such trucks must be all-purpose trucks. They keep the wheels of commerce moving. There can be no question about the power plant.

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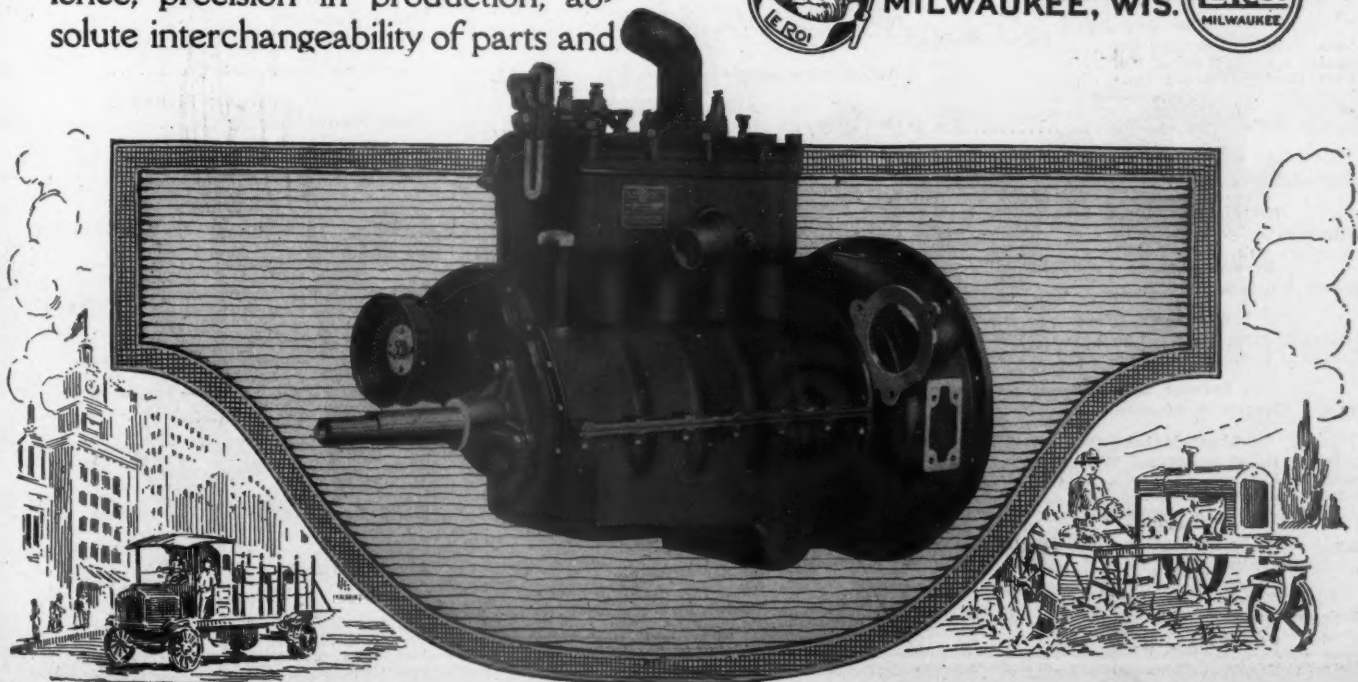
Q Model 2C with 3 $\frac{1}{8}$ " bore and 4 $\frac{1}{2}$ " stroke is giving splendid service and satisfaction wherever it has been adopted.

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Models:  
2½, 3½, 5 Ton

If you believe in selling the type of truck that exactly fills each customer's needs—even if that means foregoing a possible greater profit—

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**Syracuse**  
**N. Y.**

# Sanford

**WORM DRIVE  
MOTOR TRUCKS**



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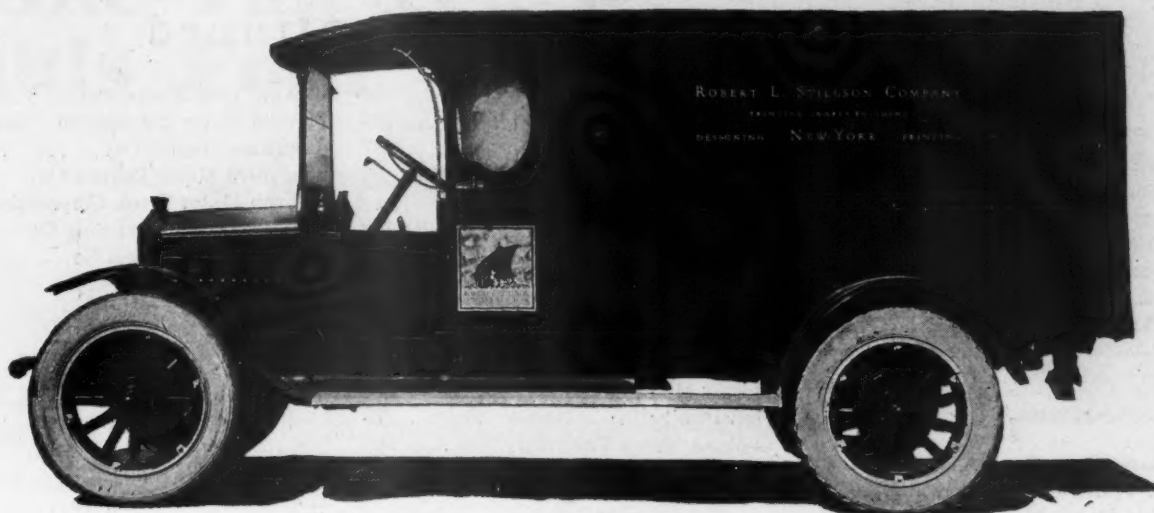
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## FROM UPTON, U. S. N.

This letter in part from Edgar W. Upton, President of the Southeastern Motor Sales Corporation, Distributor for Rainier Worm Drive Trucks in Florida, Alabama, Georgia and Tennessee, to a prospective dealer, expresses the sentiment of our entire dealer organization. Mr. Upton was a commissioned officer in the U. S. Naval Service from the start of America's participation in the war.

"We took over the Rainier line because of the following reasons:

1. "The experience of the officers of this corporation (while in the service of the government during the war) with trucks and vehicles of every possible description gave us an excellent opportunity to judge of the relative merits of the different types, and for an all-around, every-day, all-day and all-night performance, we found no other vehicle so nearly 100 per cent efficient as Rainier trucks. They were always ready to run.
2. "This corporation realized before it started business that if it wanted to become successful and remain in busi-

ness, it could not afford to deal in products whose value was not real, and behind which was a manufacturer who might at any time become an 'also-ran.' The Rainier was one of the first to live; it has today every appearance of being one of the last to die.

3. "The Rainier manufacturers maintain an attitude of constant helpfulness, and sincere interest in their representatives, and, therefore, the relationship between the dealer and the manufacturer is most cordial and agreeable."

Southeastern Motor Sales Corp.

Atlanta, Ga.

EDGAR W. UPTON, President.

Good territory is still open to responsible dealers who can swing the Rainier Agency. Contract is liberal—profits good. Write today for details.

### RAINIER MOTOR CORPORATION

Salesrooms, 225-227 West 58th Street  
New York City

# Rainier

TRADE-MARK REGISTERED

WORM DRIVE TRUCKS



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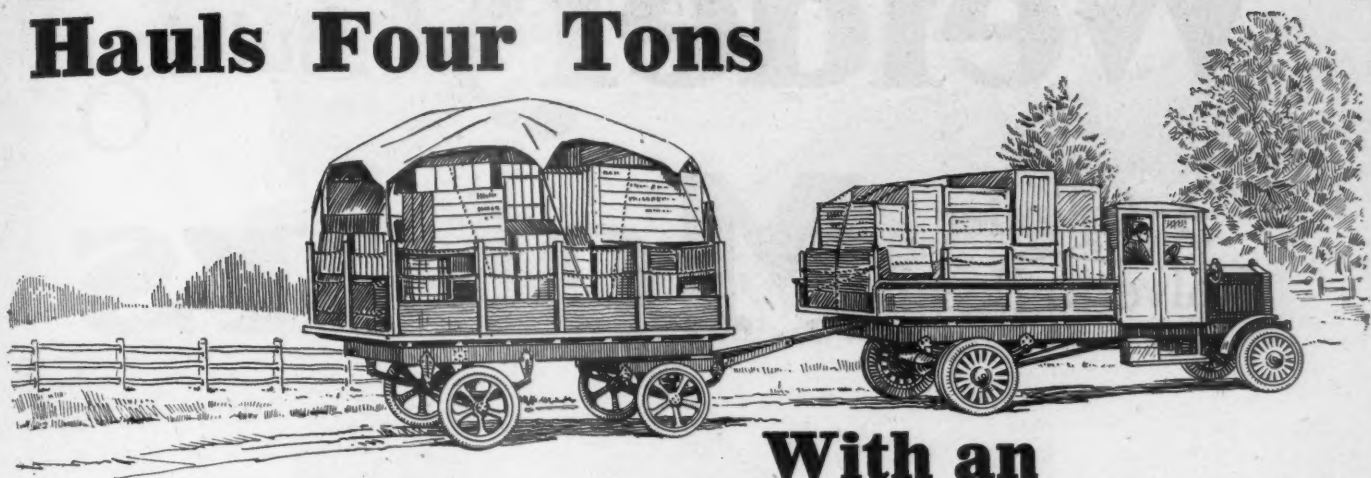
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# A One-Ton Truck Hauls Four Tons



## With an AUTOMOTIVE TRAILER

Point this out to motor truck users. Show them that the slight additional cost of AUTOMOTIVE *quadruples* the earning capacity of their trucks.

Prove to them in black and white just how swiftly the additional cost is absorbed by the savings effected.

In transporting increased tonnage in quicker time—

In loading and unloading while truck operates under pay loads—

In operating without incurring charges for extra driver or gasoline.

The AUTOMOTIVE Turntable that eliminates destructive side sway; Oil-less Bearings that assure dependable lubrication—these are some of the features which further speed up *Automotive trailer and truck sales* for forward-looking dealers.

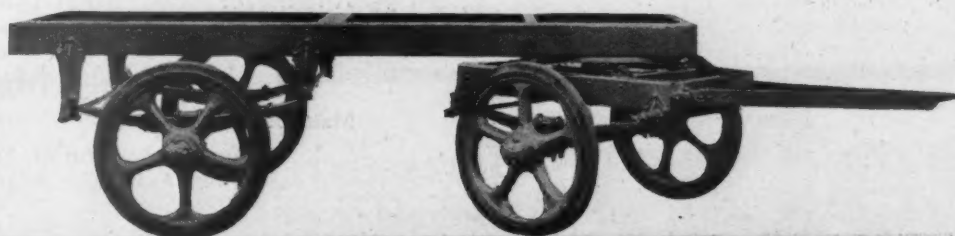
### Announcing

the removal of our factory and general offices to Springfield, Illinois. This change was made necessary because the increased volume of business could not be handled in the old plant at Kincaid, Ill.

*Write for Our Sales Proposition*

Models: 4 Wheel, Semi-pole, 2 Wheel. Capacity  $\frac{1}{2}$  to 20 Tons  
7 TYPES

**Automotive Trailer Corporation**  
Factory and General Offices Springfield, Illinois

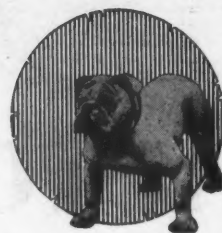
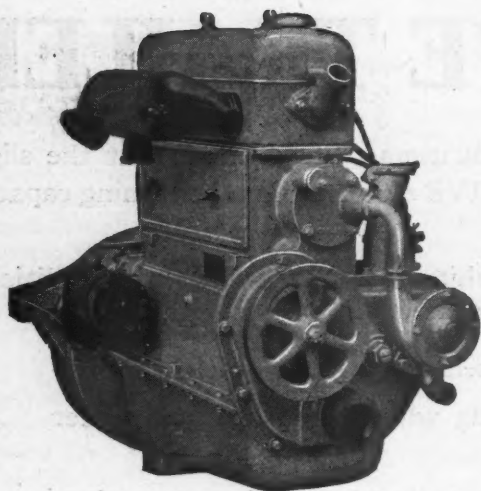




# Weidely Bulldog

## Motors

4-Cylinder  
Valve-in-Head



### Speed Wagon Truck Type Motors

Speed wagon type motor trucks have brought new demands.

The users want trucks propelled with motors which will haul loads at passenger car speeds and have the durability of heavy-duty truck and tractor motors.

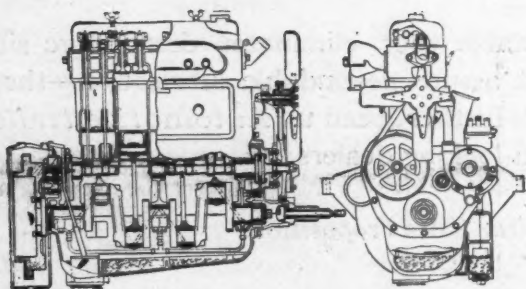
They want a machine economical to operate.

Passenger car motors have the ability to operate economically, but are not sufficiently rugged or properly cooled for hauling truck loads at high speeds.

Heavy-duty truck and tractor motors are too heavy for economical operation at high speeds.

The Weidely Motor embodies the qualities of passenger car and heavy-duty truck and tractor motors. For years we have been supplying high-speed motors built for heavy-duty service. Investigation reveals a wonderful record of performance in this field.

Weidely Motors are in large production, our plant being equipped with the most modern machinery necessary for the manufacture of this particular model. Correspondence with our engineers is invited. Write for full technical description and other interesting data.



#### Specifications

Bore,  $3\frac{3}{4}$  in.; stroke,  $5\frac{1}{2}$  in.; piston displacement, 243 cu. in.; overhead valves; force feed lubrication; centrifugal water pump.

#### Weidely Motors Company

Main Office and Factory

Indianapolis, Ind., U. S. A.

New York: John M. Steinau, 2 Columbus Circle

San Francisco: Adam-Hill Co., 96 Ninth St.



**P**RACTICAL men never lose their confidence in trucks equipped with Russel axles.

They know that engineers capable of designing a truck of acknowledged stamina, strength, and operative economy select their rear axle with caution and care.

Quite naturally they look for the same reassuring qualities in Russel axles. And they find them there, too.

RUSSEL MOTOR AXLE COMPANY  
DIVISION McCORD MFG. CO., INC.  
DETROIT MICHIGAN

Garfield

---

# Russel Internal Gear Drive Axles

"Master of Road and Load"





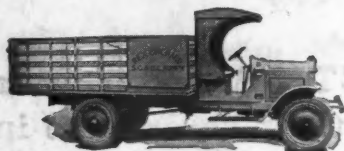
3/4 Ton



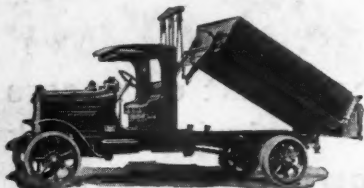
1 Ton



1 1/2 Ton



2 1/2 Ton



3 1/2 Ton

2 Ton  
shown below

# Stewart

## MOTOR TRUCKS

**Every month and every year  
Stewart sales keep jumping**

**A** MILLION a month and more! One of the world leaders in truck building in just eight years—that's the Stewart record! Starting with \$12,000 a month in 1912, business men and farmers this June paid over \$1,400,000.00 for Stewart Trucks.

The growth has been constant and consistent. Owners who bought one on trial soon built up their fleets, and told others of their wonderful capacity for work and their economy in use.

*Stewart trucks have won—By costing less to run*

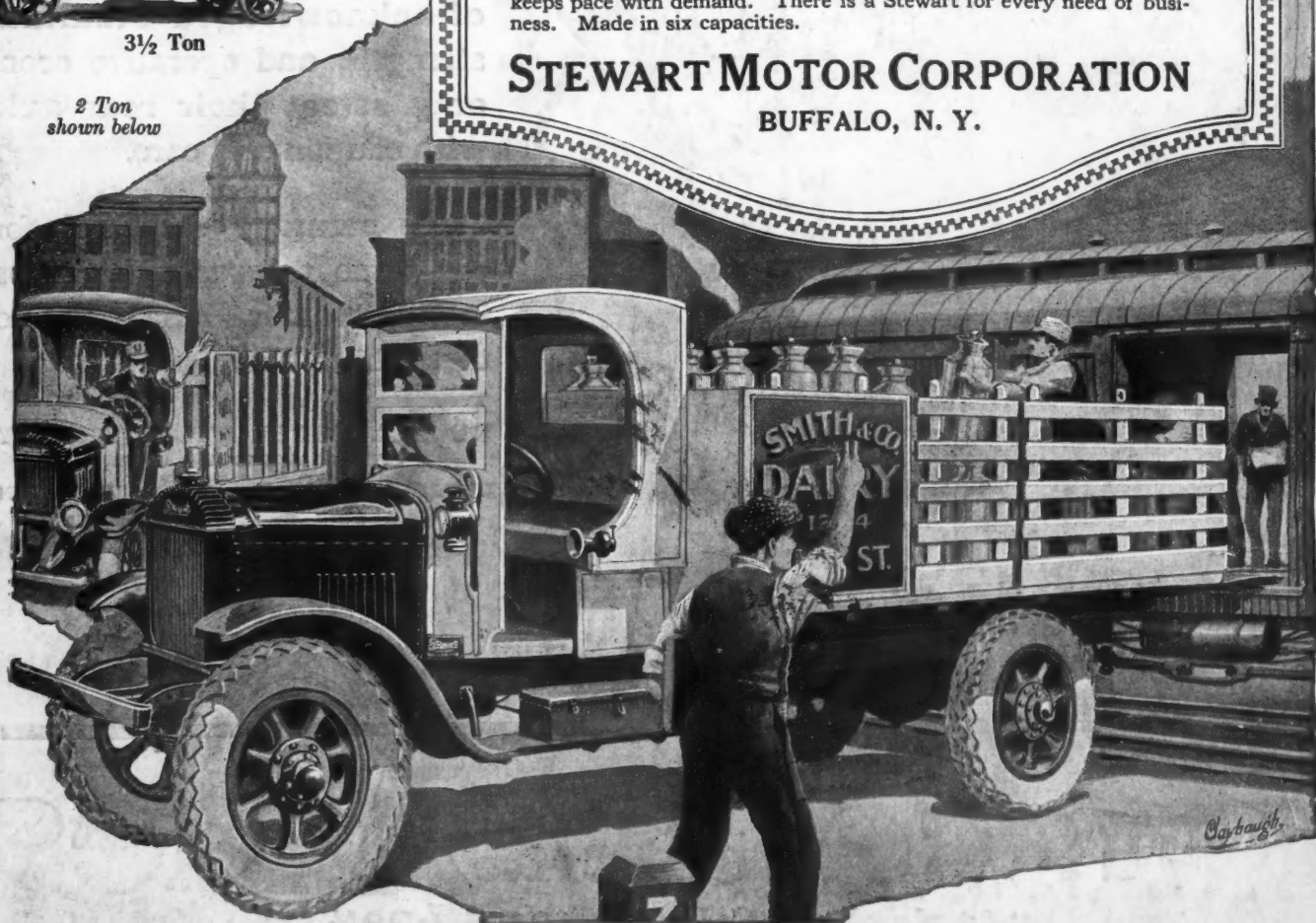
Inexpensive to buy and economical to run; Stewarts are built right, balanced right, strong and sturdy. Designed by experienced truck engineers; built entirely of truck parts, with all needless parts and hundreds of pounds of needless weight eliminated, Stewarts save on first cost, on tires, repairs, gasoline and oil.

Every dollar invested in a Stewart is a working, earning dollar. Stewarts pay profits to owners. Today more than a million dollars a month is being paid for them throughout the United States and in 39 foreign countries.

Factory output has been more than doubled this year. Production keeps pace with demand. There is a Stewart for every need of business. Made in six capacities.

**STEWART MOTOR CORPORATION**

**BUFFALO, N. Y.**



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no.2

# THE COMMERCIAL CAR JOURNAL

Entered as Second-Class Matter at the Post Office at New York, N.Y., May 1, 1907, under No. 100,000.



## BUY REPUBLIC TRUCKS

Republic construction, assuring ruggedness and performance, contributes its important part to the world's need for dependable transportation. Maintenance of two thousand fully equipped service stations and seven National Parts Depots gives positive and uninterrupted service to owners of Yellow Chassis trucks everywhere.

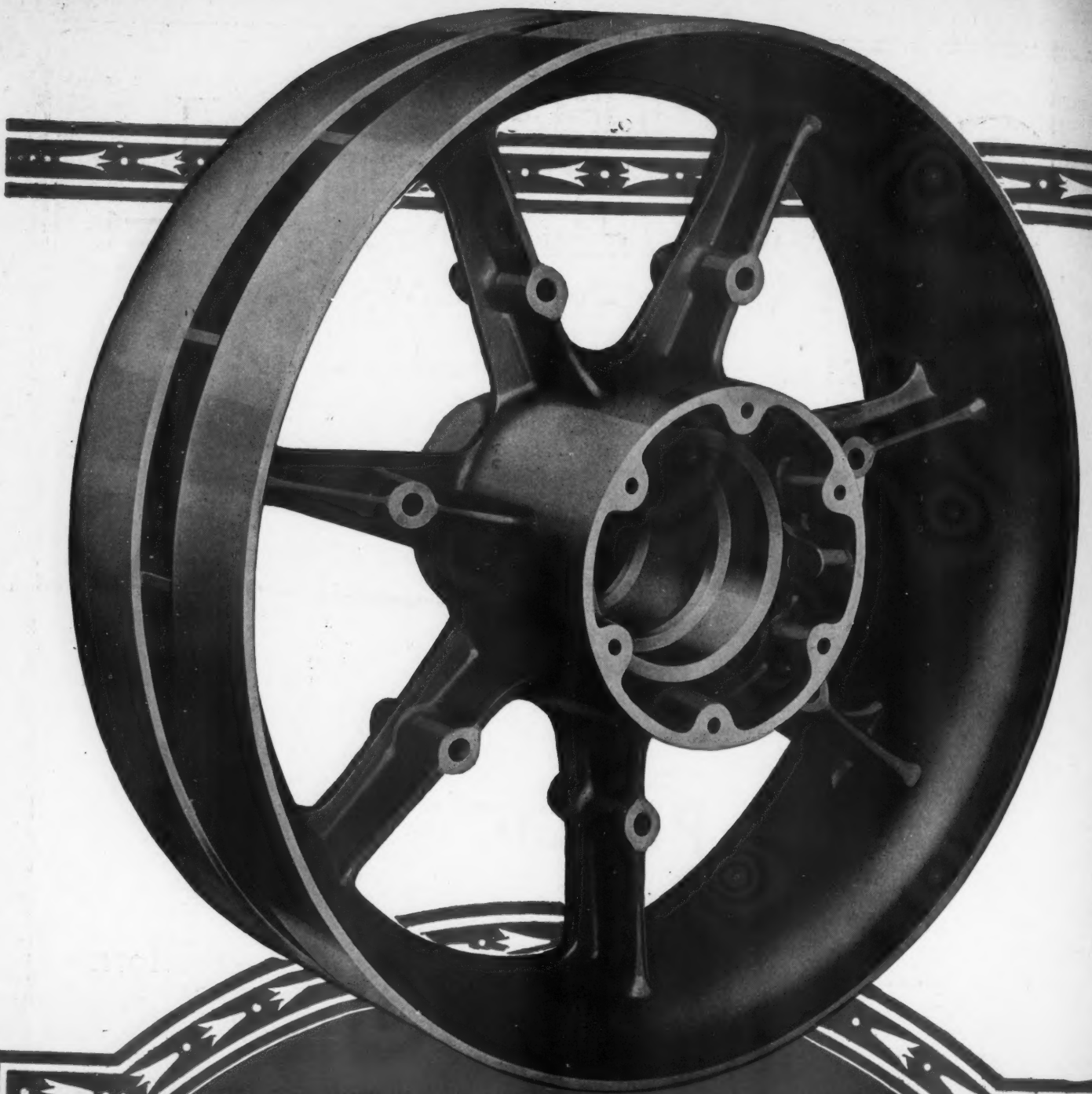
# REPUBLIC TRUCKS



Republic Truck Sales Corporation, 938 Michigan Avenue, Alma, Michigan

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# WEST'S

## CAST STEEL WHEELS

This new French Rim Wheel has some unique advantages that recommend it for the earnest consideration of truck builders. It is lighter than a wooden wheel of similar truck capacity. Its construction is adapted to any standard type of axle and for use with solid tires.

*Specify this special West Wheel on your next Solid Tire output*

We also make steel wheels for use with pneumatic tires, either demountable or detachable type.

**THE WEST STEEL CASTING CO.**

CLEVELAND, OHIO  
1790 Broadway, NEW YORK CITY  
28 Meigs Building, DETROIT

"WATCH THE WEST CAST STEEL WHEELS GO ROUND"

## THE PUBLISHERS' PERSONAL PAGE

### Developing Better Selling and Merchandising Methods



UTOMOTIVE "merchandising," in all its ramifications, was given more attention at the Chilton conference than any other subject. Furthermore, this subject will be given more careful attention in the future in all Chilton publications; particularly in view of the fact that selling conditions in the automotive field are changing rapidly. Every dealer and manufacturer must realize that better selling methods are needed in the automotive field, and that a closer relationship must exist between the manufacturer and the dealer in the future.

In this connection, the Editorial Departments of the Chilton publications will devote more space to such articles and editorial observations which deal with better Selling and Merchandising Methods.

For that reason the Chilton Company saw fit to call together all its traveling representatives, both editorial and advertising, as well as the heads of various departments, to a conference which was held during the last week of September, at Atlantic City. At this convention, those problems which are uppermost in the minds of the automobile, motor truck and tractor industries were discussed and plans were formulated for the purpose of helping those industries in realizing the conditions which are ever before them.

To constantly increase the editorial and advertising value of its publications has always been the aim of the Chilton Company; to guide those industries represented by the various trade journals published by the Chilton Company, and to do more for its advertisers than merely sell them so much space, have always been and always will be the factors which are closely interwoven in the "Chilton Service" policy.





## For Farm or City Use

The demand on farms and in cities is for speedy, dependable, pneumatic-tired trucks of moderate tonnage, capable of doing a real day's work at a moderate cost.

# DEFIANCE

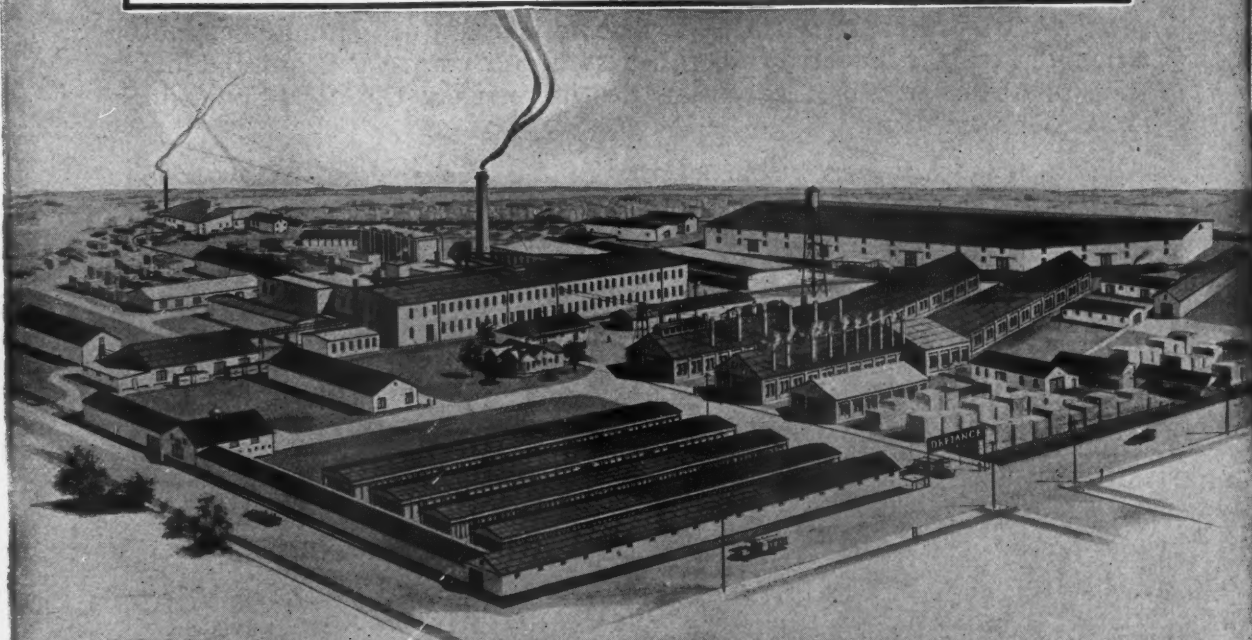
*New Design*

## SPEED TRUCKS

meet this demand fully—they furnish transportation at a surprisingly low ton-mile cost.

The Defiance dealer is, therefore, specially equipped to serve his customers; and the distribution of Defiance trucks is a profitable connection. Let us send you details.

(5)



*Manufactured by*  
**DEFIANCE MOTOR TRUCK COMPANY**  
*Defiance, Ohio.*

# THE COMMERCIAL CAR JOURNAL

Entered as second-class matter at the Post Office at Philadelphia, Pa.,  
under the act of March 3, 1879

Vol. XX PHILADELPHIA, OCTOBER 15, 1920 No. 2

Published the 15th of each month by the  
**CHILTON COMPANY**

Market and 49th Streets Philadelphia, U.S.A.

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## SUBSCRIPTION RATES

United States and Possessions	\$2.00
Canada	3.00
Foreign	4.00
Single Copies	40c

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The Commercial Car Journal is a member of the Audit Bureau of Circulations, the Recognized Authority on Circulation Audits



## "NORMA" PRECISION BALL BEARINGS (PATENTED)

Some things are so unalterably good, so inescapably essential, as successfully to resist even the cheapening effect of low-priced competition. With the passing of years, the demand steadily increases for "NORMA" Bearings—an inevitable result of the steadily increasing demand for the high-grade magnetos and lighting generators in which "NORMA" Bearings are standard.

See that  
your electrical apparatus  
is "NORMA" equipped

## THE NORMA COMPANY OF AMERICA

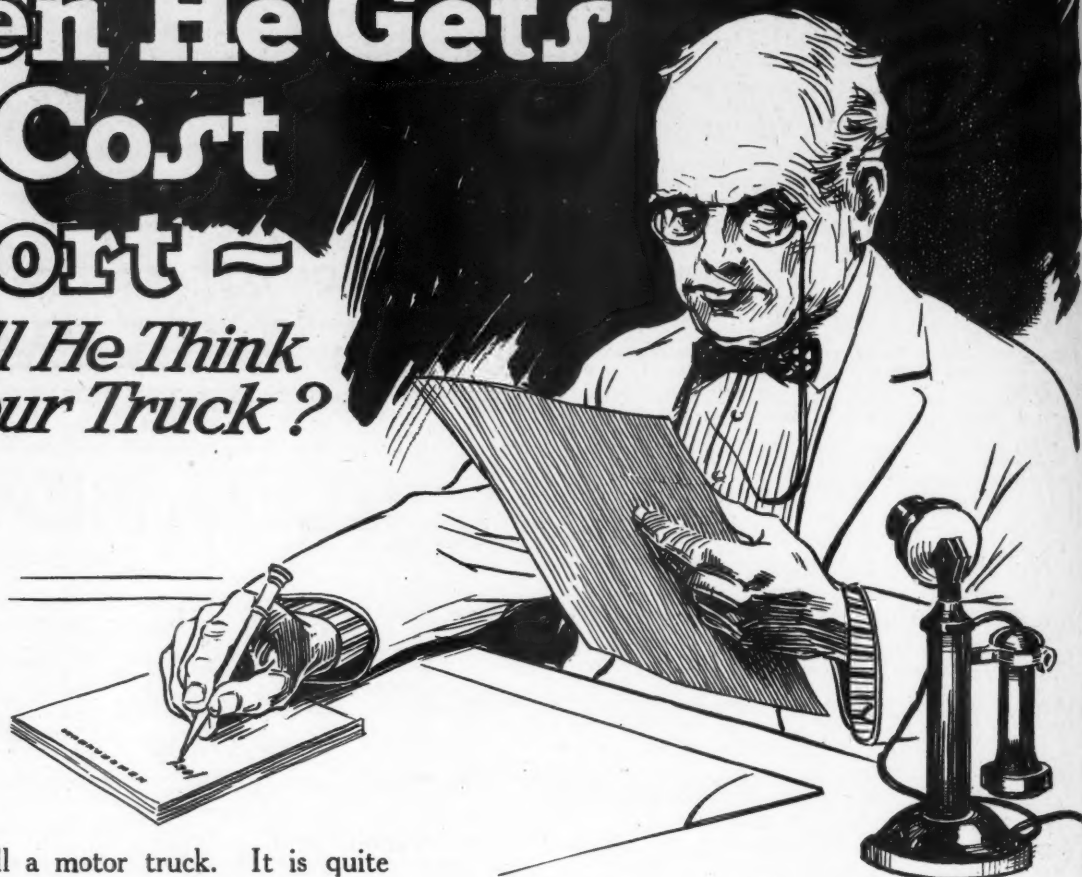
Anable Avenue  
Long Island City  
New York



Ball, Roller, Thrust and Combination Bearings



# When He Gets the Cost Report ~ *What Will He Think About Your Truck?*



It is one thing to sell a motor truck. It is quite another feat to keep it sold.

The manufacturer who is building for tomorrow; the man who sees the vision of the great possibilities of the future cannot afford to jeopardize any portion of his final success by an ill-advised decision of today.

It is your constant aim to lower operating costs. When your customer sees his first cost report, be certain that he is pleasurablely surprised rather than disagreeably disappointed.

One way, in fact, *the main way* to make sure that maintenance

expense and operating costs will be low is to select light weight parts that stand the strain without adding bulk to the assembly.

Bossert Pressed Metal Parts are made with this end in view. They are "pounds-lighter" than heavy castings or malleable iron, and contribute more lasting, permanent strength than do these old time parts.

Keep your customers sold! Do this by reducing weight everywhere without sacrificing strength or dependability. The truck equipped with Bossert Parts, of which there are more than 200, costs less to operate because it consumes less gas and oil and has less unsprung weight.

Let the Bossert Engineers confer with you about reducing the weight of *your* motor truck

## THE BOSSERT CORPORATION

*Main Office and Works:* Hickory Street and West Avenue, UTICA, N. Y.

*Branch Offices:*

New York City—30 Church Street Cleveland—611 Citizens Building Detroit, Michigan—1513 Ford Building

Manufacturers of  
Axle Housings  
Ball Cups  
Brake Drums  
Brake Bands  
Hub Flanges  
Hub Caps  
Step Hangers  
Sheet Metal Stampings  
Torque Arms and Tubes  
Wire Wheel Hubs

# BOSSERT

## PRESSED METAL PARTS

# ***SPRING PERCH***

## ***TRUCK SPRINGS***

### **Notice to the Trade**

During the current year we have moved into, and have in full operation, our new, large and thoroughly modernized factory at Stratford, Conn. (Suburb of Bridgeport.)

We manufacture exclusively high-grade leaf springs from thoroughly tested approved alloy steels for both commercial and passenger cars.

We employ the most modern methods and in the hardening and tempering processes, use specially constructed rotary furnaces under thermostatic pyrometer control, insuring, thereby, the finest metallurgic condition possible, with absolute uniformity in temper and hardness.

Believing that the best spring is the cheapest, we invite correspondence and will be glad to submit quotations on receipt of specifications and to assist in the proper design of springs for new models about to be produced.

**GET THE BEST**

### **Spring Perch Company**

*Makers of Springs Since 1843*

**Stratford, Conn.**







## Dependability, Low Operating Cost and Good Dealer Service

Influence Large New York Coal Concern to Standardize on Selden Trucks

The Powell & Titus Coal Co., one of the largest coal companies in New York City, have standardized on Selden Trucks for their delivery equipment "for four very good reasons," as they put it. And they give the reasons as follows:



*First:* Selden Trucks are especially well adapted for the heavy hauling of the coal business, and therefore can be depended upon to give continuous service.

*Second:* Their operating and repair costs are low.

*Third:* Because of the excellent service rendered by the New York City Distributors of Selden Trucks.

*Fourth:* Standardization on a dependable truck enables mechanics to become so familiar with the construction that much time is saved in making repairs.

The Powell & Titus Coal Co. delivers coal in quantities of 5, 10 and 20 tons to dwellings and apartment houses principally, and the coal has to be carried from the trucks to the basement. In spite of these short hauls and idle time the Company claims to make these deliveries cheaper by their Selden Trucks than by horse teams. They also state that the total cost of actual repairs on all these trucks since they were purchased three years ago amounts to but \$650.00.

This is typical of the records which Selden Trucks never fail to establish. They make permanent Selden users.

*1½, 2½, 3½, 5 Ton Models—All WORM Drive*

**SELDEN TRUCK CORPORATION, Rochester, N. Y., U. S. A.**

# Selden Motor Trucks



LOOK FOR THE BALL-POINT HAMMER MARKS, INSIDE, THE RING

# American *Hammered* Piston Rings

## LEAKLESS

By sealing the combustion chamber and preventing the leakage of gas and oil, American Hammered Piston Rings perform their duty—*permanently*.

Satisfaction and profit build business.

*Ask Your Jobber*

AMERICAN HAMMERED PISTON RING CO.  
BALTIMORE, MARYLAND



# *The Lavine* **Steering Gear**

## **The Adjustable Gear**

It has taken ten years of unremitting experimentation and toil to bring the Lavine to its present highly perfected state.

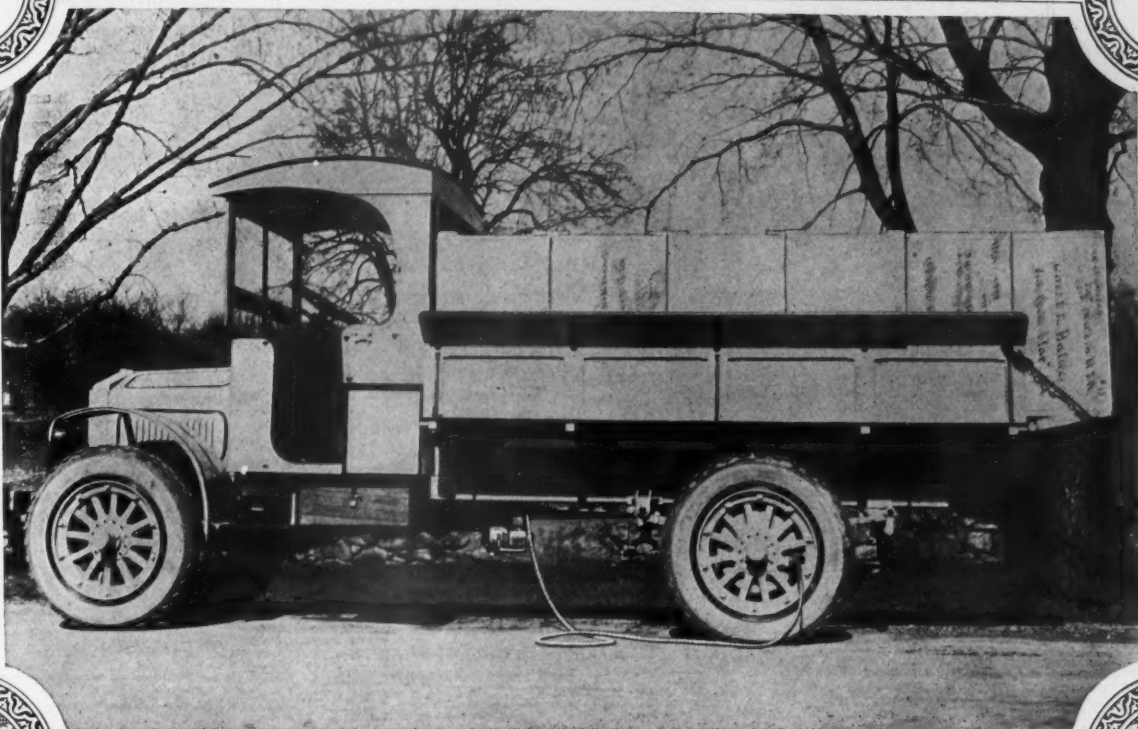
The Lavine is the SAFE Gear. So certified to by the Nation's foremost truck makers who will accept no substitute.

A simple and rugged construction; a thoroughly hardened mechanism; a positive ADJUSTMENT—these notable features are found only in the Lavine.

*Why not put your gear problems up to the leading gear specialists in the automotive industry? WRITE.*



**LAVINE GEAR CO. MILWAUKEE WISCONSIN**



*No Motor Truck or Motor Car is completely equipped that is not equipped with  
a Kellogg Engine-Driven Tire Pump*

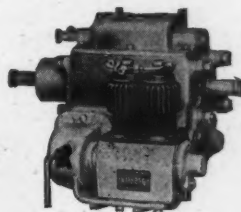
## You Can Judge a Motor Truck or Motor Car by the Pump It Carries

**J**UST as the strength of the chain is no greater than that of its weakest link—so the quality of a motor truck or motor car is no greater than that of the parts of which it is composed. A KELLOGG Engine-Driven TIRE PUMP on a truck or car is an indication of the highest standard of quality—proof of the manufacturer's purpose to build into his product only the best parts obtainable.

For years the Kellogg Manufacturing Company has enjoyed the distinction of leadership in the manufacture of tire pumps. Practically all of the leading motor trucks and motor cars manufactured today are equipped with KELLOGG PUMPS as standard equipment. KELLOGG PUMPS save costly time, reduce tire costs and increase the comfort of motoring. Without them it would not be possible to equip trucks with pneumatic tires.

### CAUTION

*Make sure your Motor  
Truck or Motor Car is  
equipped with a KEL-  
LOGG Engine-Driven  
TIRE PUMP*



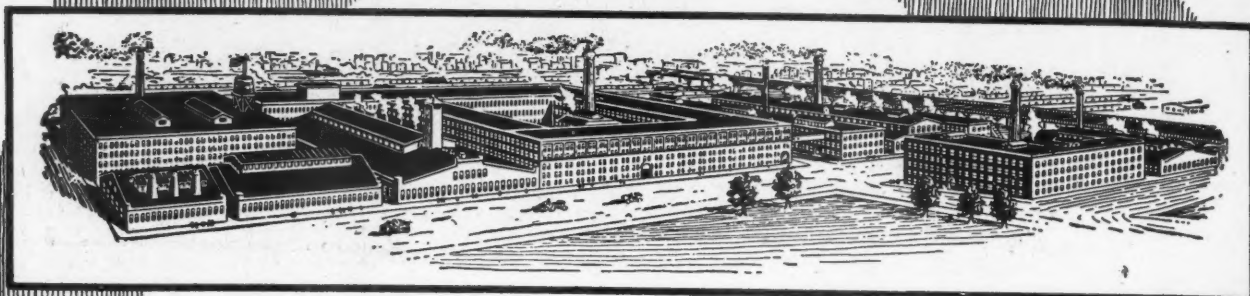
KELLOGG MANUFACTURING CO., ROCHESTER, N. Y., U. S. A.

# KELLOGG

## TIRE PUMPS



# TROUBLE PROOF TANKS



*Our 15 Acre Plant—At Your Service*

## G.P. & F. Seamless Tanks Spell Safety for the Truck Maker

The trifling difference in cost between G.P. & F. Tanks and the ordinary kind is an exceedingly small premium to pay for *tank insurance*.

When you use G.P. & F. Tanks you *know* they will not leak. You know that their seamless, welded, terne-coated-after-manufacture construction will easily withstand the racking vibration and sudden stresses of truck operation.

Our 39 years of tank-building experience is embodied in these top-quality tanks *which outwear the trucks they serve*.

The premium on tank insurance that spells *safety for your reputation as a quality-truck maker* is small indeed.

What are your quantity requirements? Send us your blueprints.

### Geuder, Paeschke & Frey Company

*Exclusive Manufacturers of the Maxim Silencer*  
St. Paul Avenue, N. W. Milwaukee, Wis.

Detroit Office: 1312 Dime Bank Building



# G.P. & F. SEAMLESS TANKS

Gasoline, Oil, Water

**G.P. & F. SERVICE**  
KNOWING HOW SINCE '81



The United States is dependent upon importations from foreign countries for all steel alloying elements except Molybdenum. The world's chief source of this metal is at Climax, Colo.



Write for Your Copy of our Book—

"Molybdenum Commercial Steels"

**Mo-lyb-den-um Steel**  
THE SATURDAY EVENING POST  
September 4, 1920

The American Super-Steel  
The LIGHT and WEIGHT CAR

THROUGH the ages, man's progress in the development of transportation has been dependent upon the discovery of better materials with which to put his ideas into execution. The modern motor car is a product of steel. And so it cannot be better than the steel from which it is made. Better motor cars require better steels.

Molybdenum Steel possesses:  
Greater Strength  
Greater Toughness  
Greater Resistance to Wear  
Shock and Fatigue.

This means:  
Lighter Cars  
Greater Economy  
Longer Life  
Maximum Efficiency  
Per Dollar Invested.

Molybdenum is the only steel alloying element mined in sufficient quantities in this country to take care of our fast growing auto industry. A mountain of Molybdenum ore at Climax, Colorado, makes the United States independent of the rest of the world in the production of the finest alloy steel.

**BE SURE YOUR CAR OR TRUCK IS MADE OF MOLYBDENUM STEEL**

Climax Molybdenum Co. associated with The American Metal Co., Ltd.  
61 BROADWAY New York  
Climax Molybdenum Company is the largest producer of Molybdenum in the World.



Climax national publicity is making Molybdenum Steels as well known to the passenger car and truck buying public as they are already known to automotive engineers and steel metallurgists. When you state that Molybdenum Steels are used in your products, you will be talking quality in terms that all buyers will understand.

**Climax Molybdenum Co. Associated with The American Metal Co., Ltd.**  
61 Broadway New York

*Climax Molybdenum Company Is the Largest Producer of Molybdenum in the World*



## Watch the Rowe in Action

Stand aside and critically watch a Rowe Truck in action, with or without a load. For smooth action and reserve power, it has no peer. The Rowe runs as smoothly as a limousine, without swaying or side motion. All the drive is forward, with no loss of power.

Even when the Rowe is empty it does not rattle and jolt as do many other makes, as depreciation is closely guarded against and forestalled by the Rowe design.

The Rowe line includes four models—1 to 1½-2-3-4-5 to 6 ton capacities, which enable dealers to approach any class of truck prospects with the certainty that they can prescribe a Rowe model to meet every trucking need.

A Wisconsin Motor, Zenith Carburetor, Bosch Magneto, Sheldon Axle, Sheldon Springs, Ross Steering Gear and Simplex Governor, are a few of its splendid parts which we mention to convey an idea of its excellent construction.

All Rowe models are alike in design and construction, differing only in weight-carrying parts. This enables Rowe dealers to equip truck users with several models of various capacities and to assure them that the cost of maintenance and expense will be lowered considerably because of this uniformity.

A few Rowe dealerships happen to be open now.

If you are interested, write us. We will tell you the Rowe story—how it was the Pioneer Worm Drive Truck of America and all that it stands for today. But to really appreciate the Rowe it is necessary to see it work, to take the wheel yourself and ride in it.

**Rowe Motor Mfg. Co.**  
**Lancaster** **Pennsylvania**

## "You can't build good radiators that way"

**T**HE Engineer had a grim smile. "You can draw up an advertisement, chuck it to the engraver and pack up and go to Europe—but you can't build a good radiator that way. Every foreman's assistant here knows every detail of a G & O Radiator—what and why and how. Every last man of us has got the Big Idea of keeping after the little details—ironing out the wrinkles. That is what makes G & O quality."

There are forty-four manufacturers of trucks, tractors, passenger cars and aircraft who know how every G & O Radiator shows the results of that same keeping after details. They use G & O Radiators.

THE G & O MANUFACTURING CO.  
New Haven Conn.



# G&O

*Radiators*





## Three Essential Values Bought With Every Autocar Truck

**Dependable Construction.** The Autocar Company was established in 1897 and all its accumulated resources of study, experience and skill are concentrated on a single product.

**Proved Ability.** Years of use in all lines of business everywhere in the United States have tested and demonstrated the Autocar's complete ability to do the job efficiently and economically for thousands of representative business firms.

**Assurance of Continuous Operation.** The Autocar Company's system of factory branches, covering the entire country, assures the continuous operation of Autocars by means of a complete, personal attention to and active, expert interest in the requirements of practical operation.

(Chassis 1½-2 Ton)

\$2300, 97 inch Wheelbase

\$2400, 120 inch Wheelbase

*Every investor in motor truck equipment has a right to expect just such essential values as are sold with every Autocar*

**THE AUTOCAR COMPANY, Ardmore, Pa.** Established 1897

The Autocar Sales and Service Company

New York  
Brooklyn  
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Newark  
Schenectady

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Providence  
Worcester  
New Haven  
Springfield

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Camden  
Allentown  
Wilmington  
Atlantic City  
Baltimore

Chicago  
Pittsburgh  
Washington  
Richmond  
Atlanta

Dallas  
St. Louis  
Los Angeles  
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